OCTOBER, 1952

WOOD and wood products

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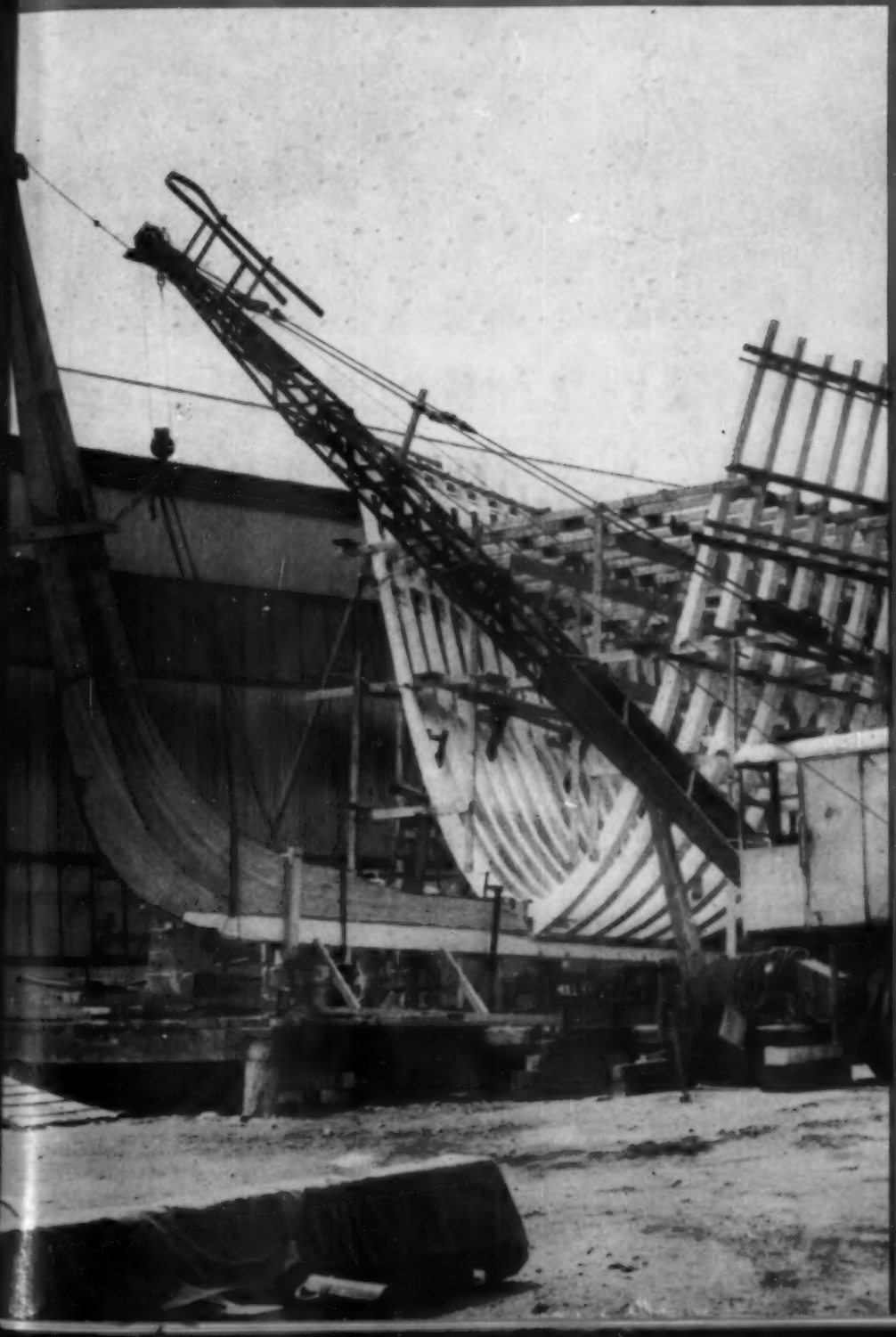
THE NATIONAL MANAGEMENT AND PRODUCTION MAGAZINE OF THE $9 BILLION FOREST PRODUCTS INDUSTRY

Clyde Martin

See Page 21—WOOD SALUTES



Marine Laminating
Modern adhesives and new production techniques mean more wooden ships. See page 24.

Marketing
On page 23 read one man's constructive ideas on advertising.

Seasoning
How to use modified kiln schedules and moisture control to up furniture output. See page 34.

Education
Industry sponsored schools can help train saw and maintenance men. Page 28.

Other Items to See

- Resins for Finishes
- Strapping cuts costs
- Modern Dense Woods
- Imported Hardwoods
- News and Trends
- Out in the Shop
- Markets
- New Products
- New Literature

A Vance PUBLICATION

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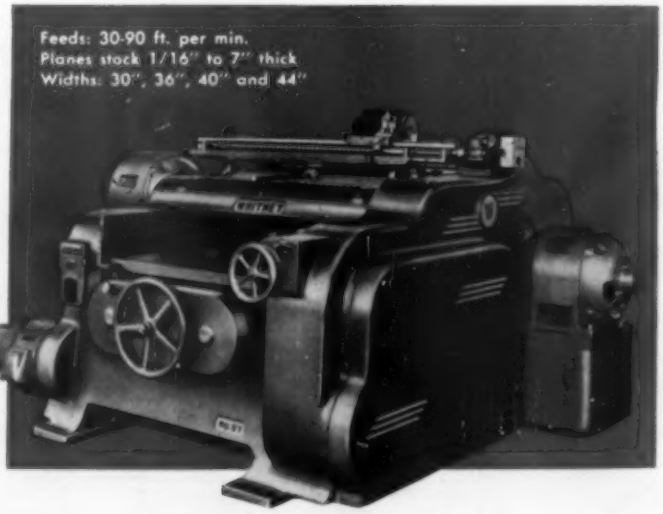
Narrow strip stock being surfaced on Whitney 97 Double Surfacer at Taylor Instrument Companies, Rochester, N. Y.

Another Another WHITNEY 97 Double Planer

OUTSTANDING PRODUCTION PERFORMANCE

The Taylor Instrument Companies, Rochester, N. Y. are well known for the accuracy and high quality of their product. They rely on Whitney equipment to help maintain that quality. The No. 97 Double Surfacer shown above has increased production substantially and produces a smooth, accurate finish which saves on their sanding operations. Trouble-free service and a minimum of upkeep expense are two of the many advantages received from this equipment.

Investigate the Whitney 97 Double Surfacer today for smoother work at high production speeds and for years of dependable operation. Complete information furnished on request. Write for Planer Bulletin M10.



In Our 115th Year

PLANER SPECIALISTS FOR MORE THAN 100 YEARS

BAXTER D. WHITNEY & SON, Inc.

PLANERS • SHAPERS • VARIETY SAWS • MORTISERS • BACK KNIFE LATHES

WINCHENDON, MASSACHUSETTS, U. S. A.

WOOD and wood products

Volume 57, No. 10

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(advertisement)

Mauk Talk

The advent of radio made the politician take his tongue out of his cheek. Now television has added a new handicap. He has to make all those promises with a straight face.

* * *

He: "May I take you home tonight?"
She: "Sure thing, toots. Where do you live?"

* * *

At these prices the horse that used to be called a filly is better known now as a fillet.

* * *

"When your girl friend said she'd dig me up a date, brother, she wasn't kidding.

* * *

The rate of building these days leaves no time for rechecking orders, correcting errors and substituting what you got for what you want.

A specific order sent to MAUK can eliminate all these problems for the busy builder. In addition to precise ordering of materials needed, let us know the end uses, too. We can help you save time, get rid of confusion.

Always the right item, the right quantity, the right price. Try us and see. The MAUK Lumber Co.

* * *

Simple Celia says whiskey won't make you drunk unless you have too much and it's always such fun to try to find out how much is too much.

* * *

He was barred from membership in the nudist club when they discovered that he always wore a hearing aid.

* * *

She: "What are you thinking about?"
He: "Same thing you're thinking about."
She: "Don't you dare move!"

* * *

MAUK Seattle Lumber Co.
Seattle 5, Washington

The C. A. Mauk Lumber Co.
Toledo, Ohio

GREENLEE No. 532 SINGLE-END TENONER IN OPERATION AT GULF MILLWORK CO., TULSA

HIGH-SPEED, ACCURATE PRODUCTION WITH THIS COMPACT, RUGGED UNIT

... *Greenlee No. 532 Single-End Tenoner*

Here is a husky, highly-efficient Tenoner that makes a little bit of floor space pay off in a big way.

Its special, compact design provides correct table travel on tracks that are relatively short. Thus, it is easy to accommodate this Tenoner in practically any production line . . . and it is easy to operate because everything is so close at hand.

Carefully grouped controls and adjustment mechanisms are readily accessible from the normal operating position. That means quick set-up, fast handling of work.

Rugged construction is another big reason why you find so may firms using the GREENLEE No. 532 today. Total weight is 2300 pounds to make this Tenoner extra-smooth running . . . it "stays put" on its settings and stands up to hard, fast scheduling.

In all, you'll find the GREENLEE No. 532 Single-End Tenoner a mighty good means for streamlining the production line . . . increasing the speed and accuracy of production . . . and making sure that you can look forward to long years of precise, trouble-free performance.

Write today for Bulletin No. 532 with complete specifications. Greenlee Bros. & Co., 930 Twentieth Ave., Rockford, Illinois.

MACHINERY & TOOLS

GREENLEE

GREENLEE WOODWORKING MACHINERY: MORTISERS • BORERS • SAWS • TENONERS • PLANERS • SHAPERS • MORTISING and BORING TOOLS

OCTOBER 1952

WOOD and wood products

VOL. 57, NO. 10

Industry News and Trends

President's Report

(The following are excerpts from the *President's Material Policy Commission Report* on the current status of lumber and lumber products, as well as future expectations. *The Editors.)*

Lumber: Nothing on the technological horizon points toward a long-term downward trend in lumber prices. Various developments in the use of wood, however, can be expected to have significant application in construction over the next quarter century.

One major trend is toward more and more fabrication at the mill of such items as doors, windows, door and window frames, shelving, cabinets, built in furniture, and precut houses. Another trend is for the establishment of more widespread wholesale and retail outlets by the major lumber manufacturers. Such practice benefits the cosumer in both quality and price.

The building materials manufactured by bonding of very small wood particles such as sawdust, shavings, and scrap into large and useful shapes through use of resin binders is rapidly being commercialized. Already practiced to some extent, the cutting and shredding of trees especially for the manufacture of synthetic lumber will make possible more-widespread utilization of forest trees as a crop to be replaced, instead of the consumption of a heritage of the past.

Despite the support of several trade associations such as the National Lumber Manufacturers Association, technological progress in the industry has been disappointingly slow.

There appear to be substantial opportunities for developing lumber products geared to the modernization of construction techniques. Some progress may be noted. Thus, some years ago lumber was brought out cut to exact dimensions with square, finished ends. This has been followed by end-matched boards which are tongue-and-groove not only on the edges but also on the ends, permitting joints anywhere along the course without the need for break joints over studs, joists, or rafters.

However, no material changes have occurred and no developments have been announced that are directed toward wood economy in the dissection of a tree into finished lumber. The initial sawing operation on the logs is performed with fast-cutting saws designed for speed rather than economy of wood. Then the rough cut surface left by the saws must be planed smooth by removal of more wood. While it is obviously impossible to convert saw logs into 100 percent of lumber, there appears to be room for substantial improvement over present methods. Of course, conversion of sawdust and shavings into resin-bonded pressed wood—synthetic lumber—will materially increase the proportion of useful building material obtainable from saw logs; however, the more than 100 million tons of waste wood produced annually could be materially reduced without endangering the raw material supply of the new resin-bonded pressed wood. The further centralization of wood waste at lumber mills by the trend toward mill-fabricated building units will provide added help toward greater utilization of our timber reserves.

ABC—It Stands for Integrity

Although we carry the symbol that stands for Audit Bureau of Circulations each month on the contents, we haven't stopped to tell you, our readers, why we belong to ABC.

Let us go back for a moment to the year 1914 in order to give you a glimpse of the history of ABC. It should then be easier to see what ABC should mean to you.

Before 1914 there was no generally accepted means of measuring a publication's circulation. There were no standards of circulation values. If a publisher honestly claimed a circulation of 15,000 he might find himself bucking a competitor's claim of 25,000 which by actual count might have been considerably lower. Likewise, advertisers were placed in the predicament of not knowing who read a specific publication.

A group of publishers and advertising men, seeing this mutual need for dependable facts and figures on circulation, formed a cooperative association which they called the Audit Bureau of Circulations.

Since that day the Bureau has had its experienced auditors make annual audits of the circulation records of each publisher member. From its very inception, ABC has stood for common understanding and trust within the advertising and publishing industry. For it has enabled the establishment of circulation standards which publishers can use in answering such questions as: Who reads the publication? Where does it go? How much do people pay for it?

The establishment of set circulation standards has had far reaching effects on the advertising business as a whole.

But where do you, our reader, individually benefit?

Editorial content is the guts of a publication. If there is meat in the editorial pages, you read the magazine. It's smart business. It helps you do your job quicker, more efficiently, with greater profit. ABC standardization of circulation techniques is the behind-the-scenes force that makes for editorial quality. You, the reader, indicate that we are a helping hand by paying to read what we have to say. The ABC audit shows us you do. The Editors

Ceiling Price Changes

Imported Lumber, Logs: On August 22nd the Office of Price Stabilization provided price relief from higher purchase costs for importers of lumber, logs and allied wood prod-

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ucts. The major source of supply is Canada, accounting for 90 percent of lumber imports and 65 percent of log imports.

The new order is Ceiling Price Regulation 165, effective August 26, 1952, provides methods for use by importers in figuring average percentage markups above landed costs during the base period, January 1 through June 30, 1950.

CPR 165 supercedes the General Ceiling Price Regulation (GCPR), for sales of imported lumber and logs and the imports regulation, Ceiling Price Regulation 31, for sales of such wood products as veneer, plywood and millwork. The GCPR froze imported lumber and log prices generally at the highest prices charged between December 19, 1950, and January 25, 1951. Although CPR 31 provided base period dollars-and-cents markups over landed costs of veneer, plywood and millwork, it did not allow importers of lumber and logs their customary percentage margins.

Furniture

Orders on Upward Swing: The furniture industry is continuing to reflect a trend that seems to point to the end of the recent business slump. Its activity pattern is one of broadening demand, rising production, and improved manufacturers' and dealers' sales, according to Seidman & Seidman, certified public accountants.

New business booked in the post market month of July, was greater than that booked in the market month of June. The increase in new orders over June was about 5%.

Compared with July 1951, new business booked this year was nearly one-third greater. The cumulative amount of new orders has improved steadily this year. This will be seen from the following, showing the percentage decline in total new orders at the end of each month in 1952, compared with the same date in 1951:

Total new orders booked:

at January 31	−27%
February 29	−24%
March 31	−18%
April 30	−13%
May 31	−11%
June 30	− 5%
July 31	− 1%

The American Furniture Mart, Chicago, reports that retail inventories are still well under August a year ago, about 11 per cent on average, although they are now picking up in contemplation of a good outlook for volume during the big peak selling period ahead. About 80 per cent of the stores contacted expect to increase sales anywhere from 10 to 20 per cent ahead of 1951 for the balance of the year.

Plywood

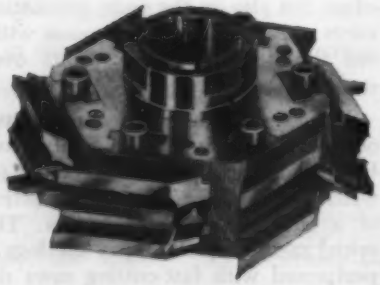
Softwood Plywood Expansion Goal: Attainment of the exterior type softwood plywood expansion goal (three-eighths inch basis) is expected by the end of 1952, the Defense Production Administration announced August 12, 1952.

The expansion goal, approved Feb. 29, 1952, represents an increase of 473 million square feet over the Jan. 1, 1951 level of 677 million square feet of production capacity. Approximately 226 million square feet of the expansion goal will be attained by 24 accelerated tax amortization certificates, 14 of which were issued in 1952 and 10 in 1951, prior to the establishment of the goal.

Of the remaining 247 million square feet of production required to fill the goal, 176 million have been accomplished within the industry without benefit of accelerated tax amortization.

Modification of military specifications to permit the use of lower grades of softwood veneer in the manufacture of overseas packaging plywood and the substitution of hardwood plywood for specialized packaging ac-

If not, it's just as if you were running your car on worn out tires—going slow for fear of a blowout and wreck. Why should your production be handicapped by use of old, outdated cutterheads. Ask Diehl for recommendations on all your cutting operations—to get the correct head, operating at the right spindle speed, to assure best results and maximum production.



CUTTER DIVISION

On the Banks of the Wabash

THE G. M. Diehl MACHINE WORKS, INC.

WABASH, INDIANA • U.S.A.

Mr. Furniture Manufacturer!

Enlarge your production capacity without delay and without needless expensive investment in new equipment and facilities. Let GAMBLE BROTHERS furnish the fine wood parts you need to meet the increased demands of the furniture market.

Get exactly what you want, as you need it. GAMBLE BROTHERS' wood parts (turnings . . . core stock . . . plastic-faced materials) are designed to your specifications, fully or semi-machined, solid or laminated.

Take advantage of GAMBLE BROTHERS' more than fifty years' experience in successfully solving special wood parts problems for manufacturers of fine furniture and many other wood products.

Write Today!

YES . . . WE CAN FURNISH YOUR DEMAND FOR MAHOGANY!

Engineered Wood Parts in Southern and Appalachian Hardwoods, Walnut, or Mahogany.

GAMBLE BROTHERS, Inc.

Offices and Main Plant: Louisville 9, Ky.
DIMENSOWOOD Division: Montgomery, Ala.

GAMBLE BROTHERS GB GUARANTEED BOND INCORPORATED

count for 63 million square feet of the goal, leaving eight million square feet unfilled.

Lumber

Shipments Above Production: Lumber shipments of 458 mills reporting to the National Lumber Manufacturers Association were 4.3 percent above production for the week ending August 30, 1952. In the same week new orders of these mills were 4.1 percent above production. Unfilled orders of the reporting mills amounts to 43 per cent of stocks. For the reporting softwood mills unfilled orders were equivalent to 23 days' production at the current rate and gross stocks were equivalent to 50 days' production.

For the year-to-date, shipments of reporting indentical mills were 4.0 percent above production; orders were 2.8 percent above production. Compared to the corresponding week in 1951, production of reporting mills was 9.3 percent above; shipments were 3.8 percent above; and new orders were 7.3 percent above.

Western Pine: Orders for Western Pine as indicated on a report of 86 mills to the Western Pine Association for the week of August 30, 1952 totaled 61,490,000 feet, compared with 57,624,000 feet for the previous week, and 60,764,000 feet for the corresponding week a year ago. Similar comparisions of shipments were 61,722,000 feet, 59,296,000 feet, and 63,440,000 feet. Production figures were 64,565,000 feet, 64,199,000 feet, and 59,797,000 feet. Orders indicated an increase of 6.7 percent over those of the preceeding week.

Southern Pine: Shipments of Southern Pine by the 132 mills reporting to the Southern Pine Association for the week ending August 30, 1952 amounted to 20,590,000 feet, which was 4.6 percent above production. Orders for the week totaled 21,953,000 feet, which was 1.67 percent below the three year average.

Douglas Fir: At the end of July, Douglas Fir sawmills had cut 5,890,383,000 board feet, slightly below the 1951 record output, according to the West Coast Lumbermen's Association. Gross stocks stood at 988,949,000 board feet, while unfilled orders were two million feet higher. Orders for West Coast lumber topped both production and shipments, but all three were bunched in close race.

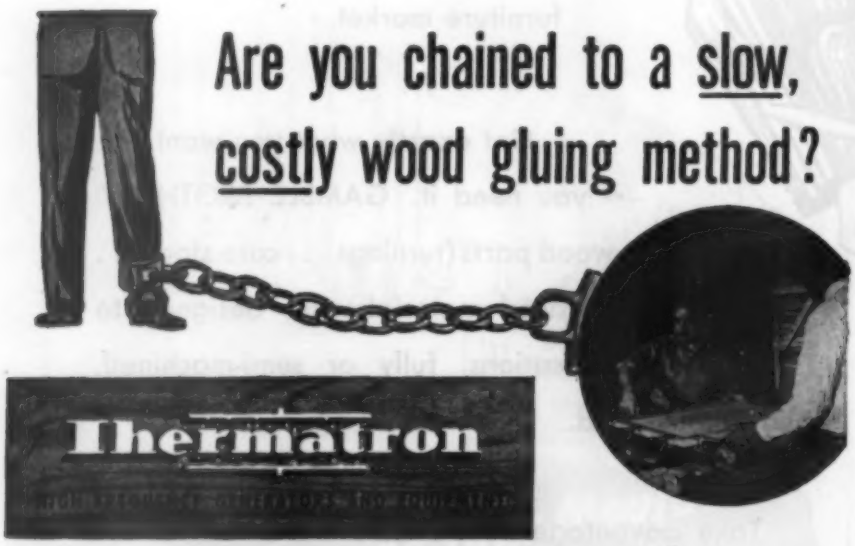
Increased Production in Mississippi: Forest lands in Mississippi now producing only 110 board feet an acre, can be increased to 400 board feet on the same acre, according to Edward Ellenberg, flood control project forester of the state. In order to reach this goal with existing conditions, all the tools of forestry will have to be brought into play.

First, according to the project forester, understocked areas must be put into full production by planting or by some other methods. There are 1,500,000 acres in Mississippi that are now denuded and must start growing timber if the state ever produces its full forest potential.

Many farmers have lands that need forest weeding. It is estimated that there are more than 2,200,000 acres in need of timber stand improvement. Experiment station plots have shown that pine saplings released from competition of valueless hardwoods will more than double their rate of growth. If this second factor is accomplished, the state would reach a total annual production of 6,600,000 board feet.

The third and most important step, Mr. Ellenberg said, is selective cutting. Farmers must turn to planting and timber stand improvements to obtain full-stocked stands.

Softwood Lumber Standards: A proposed revision of American Lumber Standards for softwood lumber, Simplified Practice Recommendation R16-39, has been circulated by



. . . For Permanent Wood Bonding in a Matter of Seconds!

The saving to you in time, labor, floor space and expensive veneers is immeasurable . . . And the bonds produced are stronger than the wood itself. Costly clamps and clamping time are eliminated, and there are far less rejects.

THERMATRON supplies the complete installation, including generators and jigs, under one contract and one responsibility. The immediate production savings THERMATRON brings you are often more than the initial installation cost.

Write us today for complete details about your bonding problem . . . We'll be glad to offer guidance without obligation. And ask us for our instructive bulletin No. W-10.

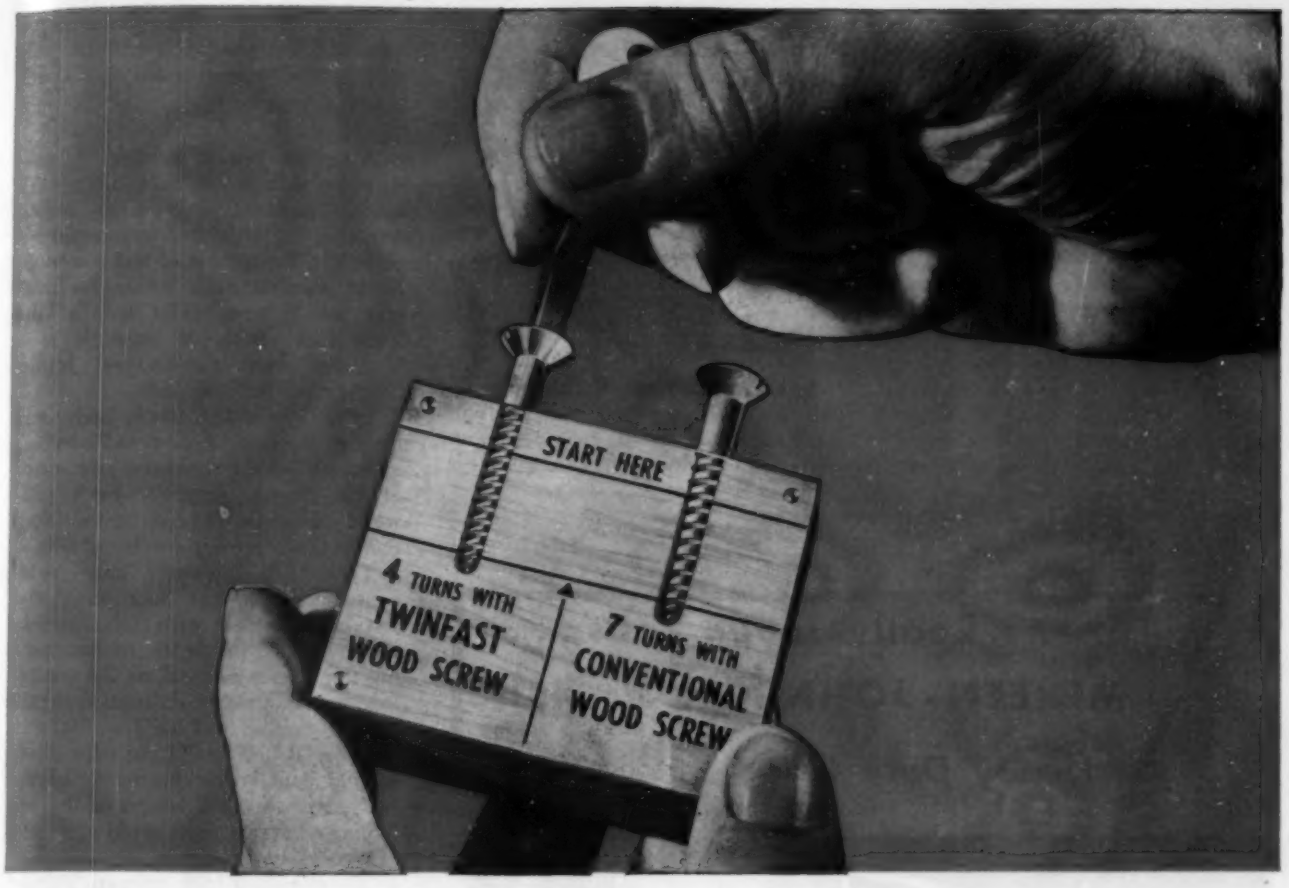
HIGH FREQUENCY GENERATORS AND EQUIPMENT FOR ELECTRONIC GLUE DRYING • BENDING • EDGE GLUING • VENEER BONDING

Seen in the jig is an entire cabinet assembly to be glue-set electronically by THERMATRON in only 30 seconds. The bond is stronger than the wood itself by actual test! Hidden in the background is the 3 KW generator which masterminds this job.

Standard stock generators available from 500 Watt to 20 KW output, operating on 110 or 220 volt lines. Larger size generators up to 100 KW can be supplied for larger requirements.

*T.M. Reg. U.S. Pat. Off.

Thermatron division
RADIO RECEPTOR COMPANY, Inc.
Sales Office: 251 W. 19th St., New York 11, N.Y. Factory: 84 N. 9th St., Brooklyn 11, N.Y.



Now You See How Townsend TWINfast* Wood Screws Drive Twice as Fast—Hold Tighter

Imagine it's you holding the block of wood above. You have just given the conventional screw seven turns to move it from the starting line 5/8" to the next line. Now you turn the Townsend TWINfast screw with its double threads—one, two, three, only four turns—it has traveled the same distance. This faster driving is reflected favorably in your manufacturing costs through a reduction in man-hours and fatigue, by reduced assembly time and increased production. Yet TWINfast Screws cost no more than ordinary screws.

The deep, sharp TWINfast threads hold tighter because the cylindrical body and greater thread area provide an equal amount of contact with the material for the entire length of the thread. This means the TWINfast screw makes a tighter assembly and, in some instances, you can use fewer screws—reduce costs.

Take a few minutes and make this simple test yourself. A Townsend sales engineer will be glad to call and give you a demonstration. Write your nearest sales office or direct to the main office at New Brighton, Pa.

Townsend TWINfast Wood Screws Available in all Sizes and a Variety of Head Styles

Round, flat, oval, slotted or Phillips cross-recessed

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Company Division, Los Angeles, Cal.

*Reg. U. S. Pat. Office

THE FASTENING AUTHORITY—Experience: over 136 years—Capacity: sixty-million parts daily—Products: over ten-thousand types of solid rivets—cold-headed parts—Cherry Blind Rivets—Twinfast Screws—self-tapping screws—tubular rivets—locknuts—special nails—formed wire parts. Plants: New Brighton, Pennsylvania—Chicago, Illinois—Plymouth, Michigan—Santa Ana, California.

the Commodity Standards Division, Office of Industry and Commerce, to manufacturers, distributors and users for their consideration and written acceptance. The report comes from the U. S. Department of Commerce, dated August 12, 1952.

This recommendation, which was originally issued in 1924, covers the basic standards used for the grading, measurement and inspection of softwood lumber. It has been necessary to previously revise these standards five times, in order to keep them abreast of conditions and improvements made in the field of lumber standardization and simplification.

This proposed revision was very carefully developed by the American Lumber Standards Committee during the past three years.

A limited number of mimeographed copies of the Proposed Revision, are available, and a copy may be obtained as long as the supply lasts, from the Commodity Standards Division, Office of Industry and Commerce, U.S. Department of Commerce, Washington 25, D. C.

Laminates

Laminated Ties: By the end of the year 100 laminated cross-ties will be completed in the Teco Lab and placed in service. Fifty Douglas Fir and fifty Southern Pine cores with tops and bottoms of hardwood will be made with resourcinal as the adhesive throughout.

Wooden Truck Bodies: A constructive selling job backed up with a sound research program may regain a market for wood lost to competitive materials. Production of test run models of wooden truck bodies for military use is now under way at the Teco Lab. Basis of strength is a U-shaped bent laminated frame. Three types will be built.

Type I wooden truck body will have a "stress skin" plywood covering glued on both the outside and inside of the frame, ruggedly built solid wood sub-rails, edged glued floor panels, and faced glued wood sills.

Type II will feature "stress skin" construction on the floor only. Plywood, reinforced with solid panels, will be affixed inside the frames, leaving the frames exposed on the outside side panels. Other construction details will be similar to Type I.

Type III body will have edge glued lumber panels over the inside of the body, with the full length of the ten laminated frame units exposed on the sides and bottom.

To provide a high strength curved sheathing for the bent corners, a plywood tube will be ripped in quarters to fit over the radius of the bent frame, and there bonded with waterproof adhesive. Each piece of wood will be impregnated with a tested and proven wood preservative.

These features are expected to overcome the objections and primary difficulties experienced with World War II truck bodies which included decay, delamination, splintering, and paint pealing.

Education

College Course in Packaging Technology: The Michigan State College, East Lansing, Mich., announces a four-year course in packaging technology designed to train men for positions as packaging specialists. The new curriculum will be administered by the Department of Forest Products. The actual course will include many engineering and business administration subjects, as well as specialized studies in packing, packaging, and car loading.

Research

Semi-refined Vanillen: The production of semi-refined vanillen, for commercial vanilla flavoring, is now

(Continued on page 16)

For the Really *Tough* Jobs . . .

MEREEN-JOHNSON No. 441

Heavy Duty Gang RIP SAW

- Six *power driven* feed rolls
- Up to 125 HP . . . 12" or 19" saw space
- Variable feed drive up to 300 ft. per minute

RUGGED, powerful—made for fast production on the most difficult gang ripping jobs. Three pairs of power-driven feed rolls really take hold of any class of stock. Kick back stops between infeed rolls eliminate accidents. An exclusive beam type mounting makes the arbor unusually smooth running . . . and this entire arbor assembly is adjustable. Automatic hopper feed is available as an extra.

For complete specifications, write for Bulletin No. 441.

FOR LIGHTER RIPPING JOBS...

MEREEN-JOHNSON

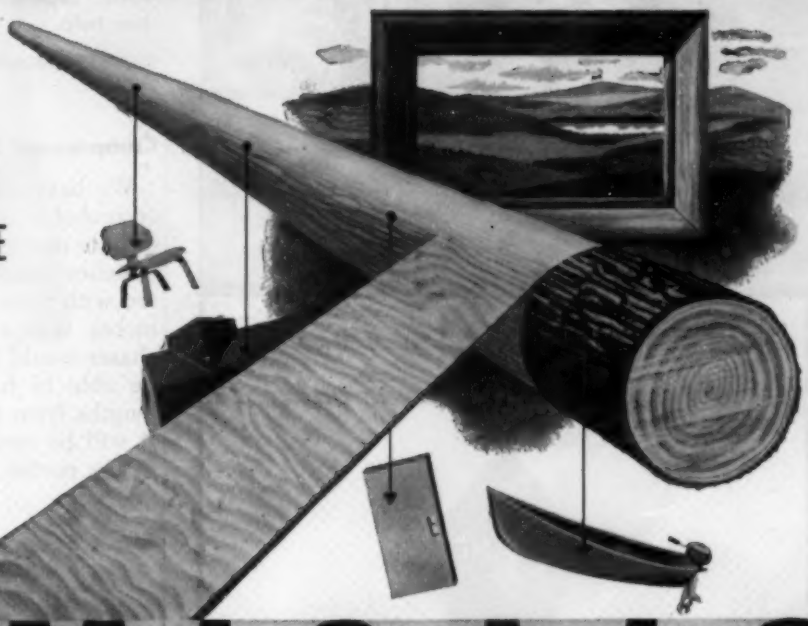
GANG RIP SAW NO. 440

Lighter duty than the No. 441, this machine for sawing cleats can also be used for many other purposes. *Bulletin No. 440 contains the complete data.*

Mereen-Johnson MACHINE COMPANY

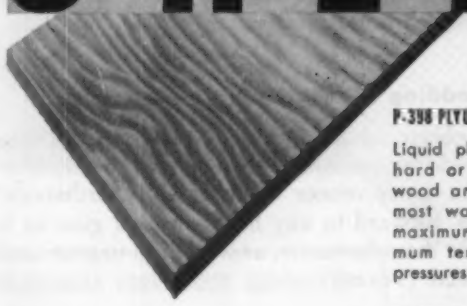
4401 LYNDALE AVENUE N. • MINNEAPOLIS 12, MINNESOTA

REICHHOLD



PLYWOOD OR FURNITURE?
THERE IS AN RCI ADHESIVE
EXACTLY RIGHT
FOR THE JOB!

CHEMICALS



P-396 PLYOPHEN

Liquid phenolic glue for hard or soft-wood plywood and veneers. Utmost water resistance, maximum speed, minimum temperature and pressures.

6000 PLYOPHEN

A liquid resorcinol glue which produces a bond resistant to boiling and practically all solvents. Cures at temperatures as low as 75°F.

P-631 PLYAMINE

A liquid urea-formaldehyde glue with exceptional storage stability under high temperatures. Suitable for either cold or hot press operations.

SW-1370 PLYACIEN

Powder form protein base adhesive designed for cold press no-clamp gluing in the manufacture of interior grade plywoods.

SW-1481 PLYACIEN

A protein base adhesive (powder form) employed in hot press gluing applications in interior grade plywood manufacturing.

SW-1600 PLYACIEN

Casein adhesive (powder form) possessing excellent strength and water resistance, ideal for furniture and door manufacturing.

REICHHOLD CHEMICALS, INCORPORATED
630 Fifth Avenue, New York 20, New York

SYNTHETIC RESINS · CHEMICAL COLORS · PHENOLIC PLASTICS · PHENOL · GLYCERINE
PHTHALIC ANHYDRIDE · MALEIC ANHYDRIDE · SODIUM SULFATE · SODIUM SULFITE

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Creative Chemistry...Your Partner in Progress

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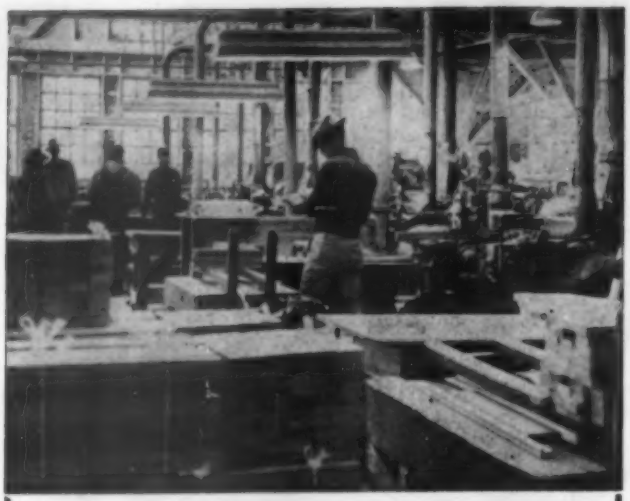


Superior plant plus seasoned experience give you supreme value in

BRADLEY BRAND

HARDWOOD FURNITURE DIMENSION

Solid and Glued
Cut to Size
Run to Detail

•

ALL COMMERCIAL SPECIES

BRADLEY LUMBER COMPANY of Arkansas
WARREN, ARKANSAS

Wood Puzzlers

This department is designed to help you find an answer to your production and sales problems. Send us the facts. Experience has shown that some other readers can help.

Compressed Sawdust Cores—No. 65

We have a customer who is in the market for 500 or probably more of compressed sawdust cores. The outside diameter could be any size from 4½ inches to 5 inches—whatever size might be considered as standard with the mill, and any length from 30 inches to 72 inches, with a 1⅜ inch square spindle hole. The purchaser would buy any standard length that you might be able to furnish, and he would saw the shorter lengths from the long lengths as might be required. It will be very much appreciated if you can help us in this matter. (Pa.)

Stock Squares—No. 66

We are in need of 4 inch by 4 inch and 5 inch by 5 inch stock squares, 8 feet in length, either Cedar, Spruce, or Redwood, with a hole drilled the full 8 foot length, approximately 1 inch to 1¼ inch in diameter. About two thirds of this port will also be turned. We are also interested in squares without turning, and in carload quantities. Anything you can do to help us find a source for this material will be appreciated. (N. J.)

Wood Shredding Machines—No. 67

Will you please advise the names of manufacturers of wood shredding machines or machines to manufacture excelsior from veneer cores of soft hardwoods? We will look forward to any help you can give us in locating these manufacturers, as we are in urgent need of this material. (Texas)

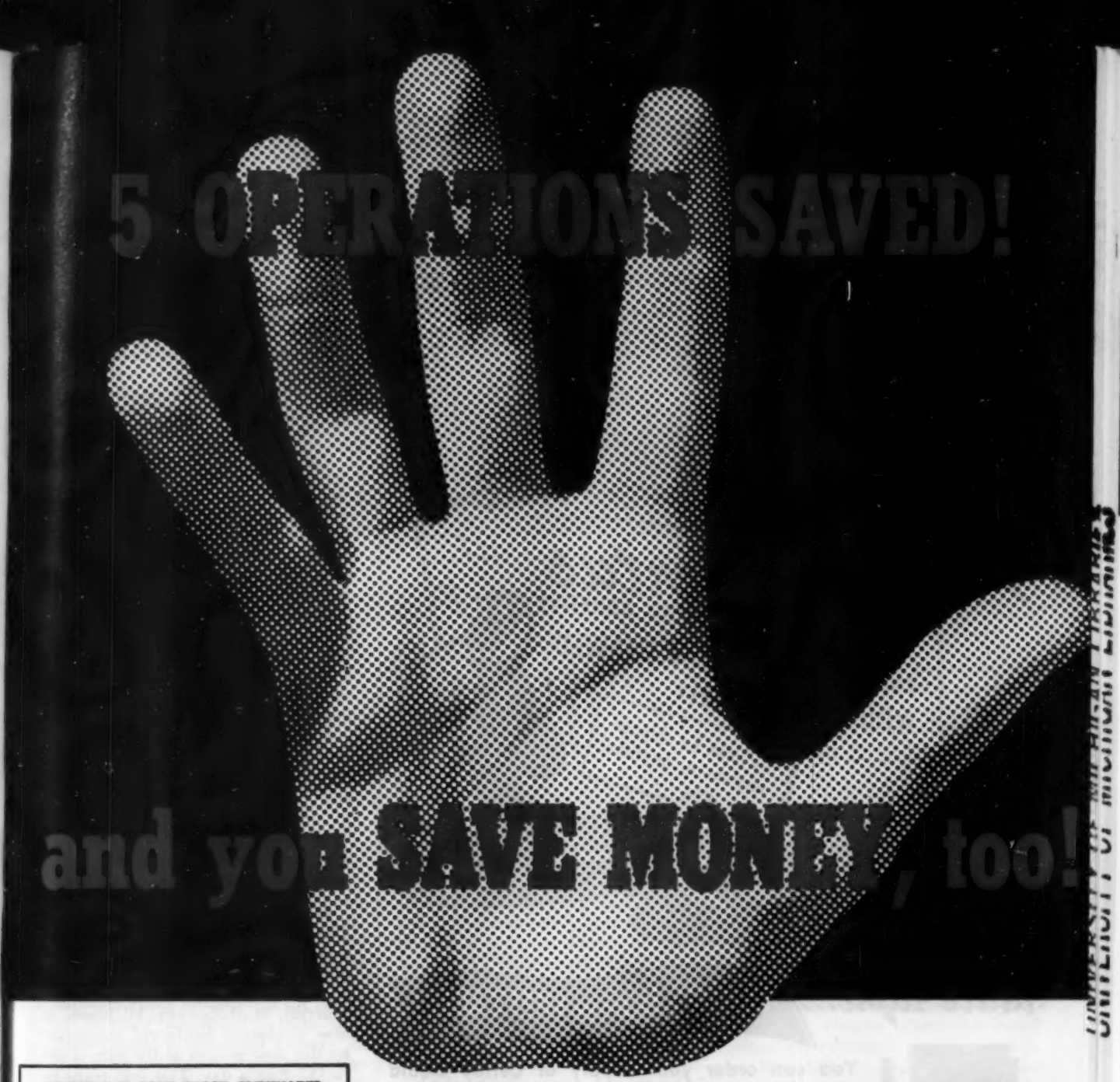
Double-Hung Wood Sash—No. 68

We are looking for a source of supply for double-hung wood sash, 1⅜ inch open, direct from the manufacturer, for apartment houses. We will appreciate any information you may be able to send us. (N. Y.)

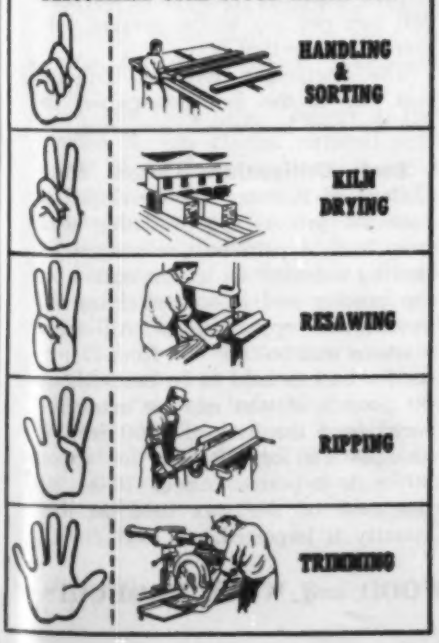
Cedar Fencing—No. 69

We would like to get a list of manufacturers of cedar fencing. Any help you can give us in this matter will be very much appreciated. (N. Y.)

If you have any problem of wood utilization, or cannot find the kind of material or machine for your particular purpose, SEND IT IN to the editor and we will put it in the WOOD PUZZLERS section.



BELCOBALSA CORE STOCK ELIMINATES



with PACKAGED, CUT-TO-SIZE, KILN DRIED

BELCOBALSA CORE STOCK

Lower priced than other standard grades of core stock, BELCOBALSA gives you many added economies which no other core stock offers. For BELCOBALSA CORE STOCK is delivered to you ready to glue — scientifically KILN DRIED, packaged, DRESSED to your specified thickness, TRIMMED exactly to your length, RIPPED to your width. Certified Kiln Dried Belcobalsa Core Stock saves you time, labor, lumber, yet costs you less — saves you money the instant you place your order!

Write for complete information, samples, prices.

BALSA ECUADOR LUMBER CORPORATION

500 Fifth Ave., New York 36, N.Y., Pennsylvania 6-0697

CERTIFIED KILN DRIED
BELCOBALSA
REGISTERED TRADE MARK

News and Trends

(Continued from page 12)

in operation at the plant of the Monsanto Chemical Co. in Seattle, Wash. The raw material used in production is sulfite liquor, a byproduct of wood pulp, which is coming from the Puget Sound Pulp & Timber Co., Bellingham, Wash.

Whole-wood Fibers: A new line of whole-wood fibers to be known as Silvaloy is now being produced at the Snoqualmie Falls, Washington plant of the Weyerhaeuser Timber Co. These fibers can be molded into various kinds of household products.

These wood fibers are shipped in bales to manufacturers, and are only one of a long list of developments toward a fuller utilization of wood in the ever expanding areas of wood technology.

New Research Guide: The fifth edition of the "Forest Products Research Guide" has just been published by the National Lumber Manufacturers Association, 1319 18th St. N. W., Washington 6, D. C. Over 17,000 research projects and programs and 22,722 domestic and foreign research organizations are listed in the 400 pages of this book. It is designed to be a guide to keep management and research personnel posted on wood research, thus helping to avoid unnecessary and costly duplication of effort. It provides means of beneficial contact between individuals or organizations with mutual project interests. The price is $10.00.

Progress Through Research: This is the title of a new booklet just published by the Weyerhaeuser Timber Co., Tacoma, Wash. which is recommended reading to everyone in the Forest Products Industry.

Weyerhaeuser invests in research, engineering, and development as a practical long range business venture. The direct purpose is to increase dollar return from each acre of company timberland. It is aimed toward developing many more new products from forest raw materials and steadily improving manufacturing efficiency. The final results of these activities will give greater profit security, more jobs, stable payrolls and permanent operation of company mills.

These are the motives behind the activities discussed on the pages of this enlightening booklet describing how one company is evolving ways to protect and grow more timber, manufacture more efficiently, create new forest products and to develop new markets for them.

Newsprint from Hardwood: The United States Forest Laboratories have developed a new process of making newsprint from hardwood. A mill of the Paper Corporation of America, at Sheboygan, Michigan, is now producing hardwood newsprint by this new process at the rate of 90 to 125 tons a day. This mill plans to acquire more machinery that will add 200 tons per day to the present volume of production.

The Sheboygan Evening Tribune was one of the first newspapers to use the new hardwood newsprint.

Bark Utilization: Oregon State College of Forestry has developed a patented process for extracting wax from bark. A petroleum refining engineering organization has an option on the process and is now studying its commercial opportunities. All bark contains wax but the wax from Douglas Fir bark is held to be best. About 50 pounds of wax can be manufactured from the bark of 1000 feet of Douglas Fir logs. It sells for about 40 cents a pound. About 70 to 80 per cent of the wax used in this country is imported.

that's right... CERTUS is now FREEZABLE!

Ask for your copy of the booklet "The First Pair of Skis" by H. L. Prestholdt, Pres.

You can order your supply of Certus Liquid Adhesive in normal quantities the year 'round.

The latest advance resulting from Monite's continuous research is the improved Certus Liquid Adhesive that is not damaged by exposures to temperatures from 50 below zero to 120 degrees above.

You can order Certus and store Certus the year 'round without worrying about its being damaged and your being caught short or faced with loss of production.

Certus may be spread by brush, glue spreader or glue gun . . . it is quick setting under pressure and normal temperatures . . . dries to a clear film that makes a "disappearing glue line".

Certus is ideal for all common woods, plastics to wood, paper, cloth, and glass.

Write for data sheet No. 502 giving complete information.

MONITE GLUE COMPANY

1045 Monite Building, Minneapolis 11, Minn., U.S.A.

"Enlightened forestry ....."

"Quality plywood ....."

"Industry leader ....."

Wood Salutes

With this issue, we are saluting three more top rank executives, each of whom is contributing his expert knowledge and experience in an important department of the forest products industry.

Clyde Martin

Clyde S. Martin has been an energetic exponent of enlightened forestry since his graduation in 1907 from Yale's school of forestry. The soft-spoken, likeable forestry counsel for Weyerhaeuser Timber Company is widely known and respected in the forest-products industry for his efforts in bringing scientific practices and management to industrial forestry. It is no coincidence that Clemons Tree Farm, the nation's first accredited tree farm, was sponsored by Weyerhaeuser while Martin was chief forester for the Tacoma, Washington firm.

Clyde Martin made history in 1947 when he was elected national president of the Society of American Foresters for a two-year term; the first forester from private industry to be accorded this honor.

Described by his friends as a hard-working man who does not seek personal publicity, but prefers to work behind the scenes, Martin is a member of the board of trustees of American Forest Products Industries, Inc.

Born in Waynesburg, Pennsylvania in 1884, Martin held important and challenging positions before joining Weyerhaeuser as chief forester twelve years ago.

Nelson S. Perkins

Nelson S. Perkins, the nation's number one "answer man" on plywood structures and the west coast plywood industry's energetic "watchdog" of quality, is technical director of Douglas Fir Plywood Association. He joined the trade association in 1936 when the industry's short pants were just beginning to chafe.

Since then, as engineer-consultant, Perkins has presided over the technical side of an unprecedented period of industry expansion.

The scope of his activities has seen a corresponding expansion. He now directs the work of 37 engineers, laboratory technicians, inspectors and administrative personnel.

One of Perkins major contributions to the industry's know-how, has been the collection and analysis of data showing the definite relationship between glue-line performance in the laboratory and in the field.

In his post as technical director, Perkins doubles in brass as the administrator of the plywood manufacturers' joint program of quality maintenance. Long an effective crusader for continuous quality betterment, he has been in large measure responsible for the maintenance of high performance requirements.

Herman B. Hoopes

As 1950-51 president of the National Association of Furniture Manufacturers, Herman B. Hoopes was one of the youngest men elected to this high industry post. The job sought him out because he has always actively interested himself in the progressive betterment of his industry. Since that time, Hoopes' interest has broadened even further.

His ability to express himself was aptly illustrated at the 1951 annual meeting of the National Hardwood Lumber Association, where he used a handy three-legged table to impress on his audience the interdependence of the three branches of government —the legs—held together by a strong and interested citizenry—the table top.

Hoopes, who is president of the Brandt Cabinet Works, Hagerstown, Md., served four years with the Armed Forces in the office of the Provost Marshall General, being discharged with the rank of Lieutenant Colonel.

Besides his own industry obligations, Hoopes is a past director of the National Assn. of Commerce.

In his own community, Hoopes has recently served as president of the Hagerstown Assn. of Commerce. He is currently chairman of the Hagerstown Housing Authority.

Associated makes a type, size and grade of Douglas fir plywood for every building need:

Interior-type: For walls, ceilings, cabinets, built-ins; for sheathing and subflooring.

Exterior-type: For siding, outdoor signs, farm structures, boats of all sizes and shapes.

Sea Swirl (interior and exterior). A beautiful decorative plywood for remodeling and new construction.

Vertical Grain (interior and exterior).

Mahogany-faced Plywood (interior).

Handy Panels (interior and exterior).

Plyron (interior and exterior). Plywood core between hardboard surfaces.

All APMI plywood is manufactured in the heart of the Douglas fir region of Oregon; is grademarked and trademarked; is available through branch sales warehouses in major building cities, sold by experienced plywood men. Your inquiries are invited.

BRANCH SALES WAREHOUSES:

4268 Utah Street, St. Louis, Missouri
4814 Bengal Street, Dallas, Texas
4003 Coyle Street, Houston, Texas
1026 Jay Street, Charlotte, North Carolina
111 Welborn Street, Greenville, South Carolina
925 Toland Street, San Francisco, California
Eugene, Oregon

SALES OFFICES:

31 State Street, Boston, Massachusetts
First Trust Bldg., Pasadena, Calif.

ASSOCIATED PLYWOOD MILLS, INC.

General Offices: Eugene, Oregon
Plywood plants at Eugene and Willamina, Oregon
Lumber Mill at Roseburg, Oregon

APMI

How to Improve Our Advertising

Wood industry advertising must create wants, not merely satisfy needs — Make customer see wood as more than raw product.

by John W. McClure*

These comments are not intended in a spirit of criticism but rather as an analysis. Those who accept the postulate that it is time for a review and re-examination of the selling technique in the hardwood trade will not object to some pointed comments upon the advertising methods which are now in general use and which are accentuated by a relatively few brilliant exceptions.

What does the word "advertise" mean? The common definition is "to give notice" and out of this simple definition has grown the type of advertising we see mostly in the lumber trade papers today. In its time it was effective and served its main purpose. But "if the salt has lost its savor," it is time to discard it for something more appealing. Advertising is like the sparkplugs on your car. They do not drive your car but without them the latent power in your fuel is useless. Likewise, advertising does not sell your lumber. It merely supplies the spark to activate the power which you put into your selling efforts.

Look at Ads

With that in mind, take an objective turn through the pages of your current trade papers. Try to look behind the words at the meaning and spirit back of them for which the advertiser pays good money for the white space. How much selling power can you *feel?* Reduce the general run of ads to a common denominator and what do you get? Reasonably interpreted they play the same tune which runs about like this: "Here is my name and address; I make good lumber; come and buy it or, if my salesman calls on you, save an order for him." There we get down to the basic fallacy that lumber sells itself, a fallacy that worked successfully in the past but which must now be discarded in the interest of progress.

The selling power to drive the industry toward success is not alone to satisfy *needs* but to create *wants*. If you regard lumber as a raw material, your buyer accepts the same idea and a rival material may satisfy his needs. On the other hand, if you convince your customer that your wood is much more than a raw material but is wrapped in a package which contains characteristics of great value to be found in no rival materials, you are stimulating his wants and doing creative selling which pays off in the form of increased demand not subject altogether to the lure of price or the temporary glitter of metals or plastics.

Besides having the qualities which meet industrial needs, hardwoods have those added qualities of charm and comfort which make for culture and the joy of living and which are found in no synthetic rival materials. Then why not apply selling power where it will do the most good and increase the per capita consumption of hardwoods?

Without going into dry statistics, every lumberman feels and knows that the per capita consumption of wood is declining. Why? Most lumbermen will agree that it is because wood has geen outsold by its rivals. All will admit that it should not be so but there it is; a condition and not a theory. Suppose that we indulge in a little make-believe, just to show the potentialities of this latent demand. There are more than 150 million people in this country. A per capita increase of 10 feet in hardwood consumption would amount to 1½ billion feet per annum, roughly 20% of our current consumption. Now 10 feet of hardwoods is hardly enough to build a cradle or a chair, much less a bed or a dresser or a table.

Why Decline?

The people of this country are able to buy. Employment was never higher. Savings are above normal. The people can buy what they want. Then why don't they want more things made from hardwoods? It is because of lack of selling power to create those wants. We like to say it is the "inroads" of substitutes but that is merely an alibi.

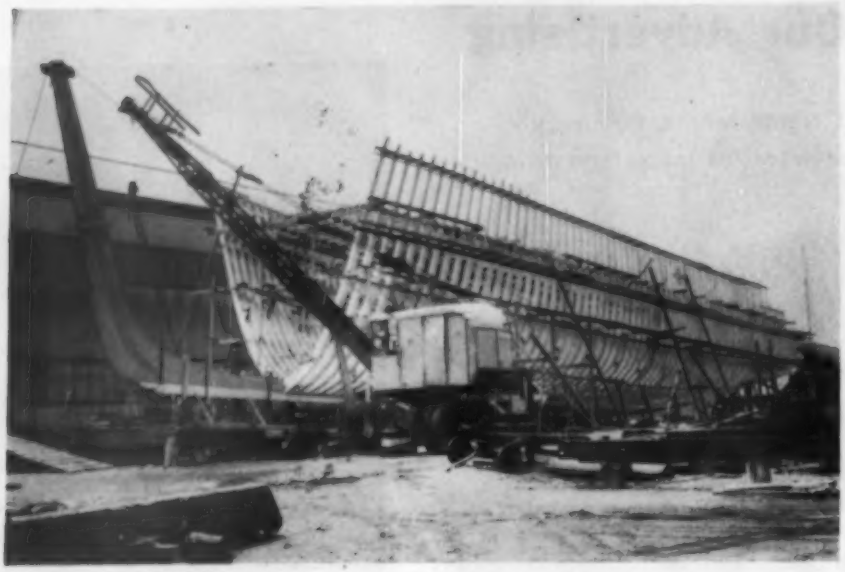
People love wood and, if that innate quality of human nature is converted into definite desire, there is no telling how much the per capita consumption of hardwoods could be increased. Here is a shining example of the idea I am trying to convey. In Timber Trade Journal (London) 19th July number, appears an advertisement of a well-known firm of British lumber merchants* who tell a charming story to arouse the love for wood. Under the caption, "Timber—the medium of all ages," there is a picture of a violin by Stradivari (1698) with these inspiring words: "The timeless nature of wood is well exemplified by the creation of the master violin makers, who so well knew and understood the medium in which they worked that nobody presumes to challenge their supremacy. That these men loved wood is certain for wood has the power of arousing true affection in those who use it. It is a gracious material, whose beauty endures but never palls. In these modern days, the appreciation of fine wood is more widespread than ever before."

That advertising copy was written by a real salesman who knows the value of the indirect approach. He is not offering *just* wood but he is selling music, melody, culture and charm with lasting qualities found only in this most versatile of all materials. He is telling a story that can be repeated with endless variations over and over again without loss of appeal. It rings true and carries confidence. It opens the eyes of beholders to see values in wood which they never suspected before and having seen these values they want to surround themselves with the products of this material which arouses and holds their affections.

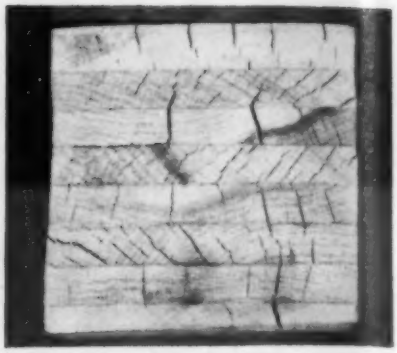
(Continued on page 56)

John W. McClure

*Retired secretary of and now consultant to the National Hardwood Lumber Manufacturers Assn.



PARTIALLY FRAMED wooden minesweeper.



TEST SAMPLE at end of delamination test. Note severe checking but insignificant delamination.

Marine Laminating Comes of Age

Modern adhesives, gluing practices improved by research, and practical advantages of wood in certain naval vessels mean enlarged market. Part I.

By R. C. Cranch, Materials Engineer, Wood Products Branch, Bureau of Ships, Dept. of the Navy, and

N. V. Poletika, Asst. Director of Research, Timber Engineering Co., Washington, D. C.

Wood still holds definite undisputed advantages as a shipbuilding material. Certainly it remains one of the Nation's abundant materials. This abundance coupled with well-known fabricating methods makes it a natural alternate for materials which become scarce in a war effort. Thus in World Wars I and II, the principal conflicts in which the United States has participated since the advent of armored ships, has been seen the construction of numerous wooden auxiliary vessels.

Need for Wooden Vessels

Present naval construction uses wood where other qualities, in addition to availability, make it a material of choice. Perhaps the most outstanding example is that of the minesweepers where the inherent properties of an organic substance make wood a logical material. AM421 vessels, 165 feet long, are a class of ship where the World War II prototype was made of steel. AMS60 class ships, 138 feet long are the YMS of World War II improved in the light of subsequent technical developments. A new design of wooden vessels, the MSB5 class Minesweeping boats, 57 feet long, have been developed recently. Current plans include construction of a number of wooden boats, barges, and auxiliaries.

Construction of minesweepers is important to the Navy. Wooden vessels of World War II did not lend themselves to preservation in the "mothball fleet." Attrition of the fleet of YMS ships placed the nation in the same position as occurred in early World War II. Under those more urgent circumstances, fishing ships were converted to minesweepers. Consequently, construction of minesweepers has been more active than that of other ships. Their completion is as vital to the balance of the fleet as any vessel recognized in the mission of the Navy.

Development of Laminating Program

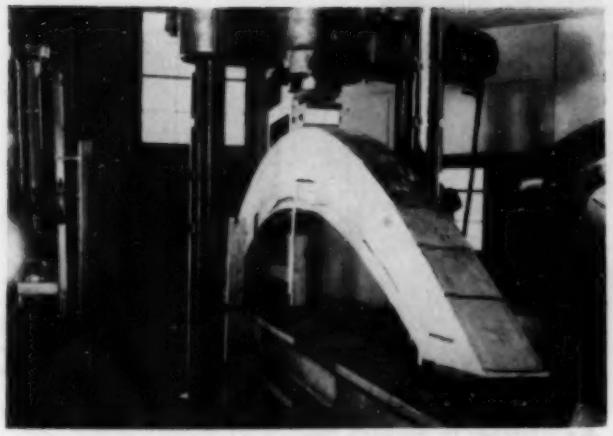
Lamination of structural members for marine service was made possible by development of waterproof adhesives during World War II. Large laminated structural members had been in use for many years where casein glue, cured at room temperature, was sufficient for the service.

Hot press, synthetic resin adhesives, curing at over 300° F, had made plywood an excellent sea-going material. The mating of these materials came about through the development of resorcinol-modified phenol adhesives curing at 190° F when used on white oak. At this temperature it was possible to cure structural members with a control of humidity so that detrimental drying of the wood did not take place during the long period required to cure adhesives in members of large cross section. In this respect wood's insulative properties are a disadvantage to the laminator.

Successful techniques were developed to use the 190° F cure. A pure resorcinol adhesive was also perfected which allowed curing at 140° F when used on white oak. However, the program was in gear and most of laminating for marine service was done at higher temperatures. The bulk of the production was done by two commercial firms. Two Navy yards also were in production at an early date. The product, mainly boat members, was shipped semi-finished to the builders. Shipbuilding at that time still depended on sawed or steam-bent structural members.

The present program differs in that laminating for marine service is being practiced almost universally, for two reasons. First, it achieves a dispersion

GLUE LINE TESTS due to severe weather is shown students by G. P. Urling, of Teco, right.



DOUGLAS FIR SHIP FRAME is tested for U. S. Navy at Teco Lab.

of production facilities. Second, in many cases the members cannot be shipped.

The design of AM421 class vessels calls for continuous laminated oak frames (ribs) and a Douglas fir stem, keel, skeg combination with only two mechanical splices. A midships frame is U shaped about 35 feet across the beam and 29 feet in depth. The keel is about 125 feet long and, combined with skeg and stem, make the principal longitudinal member of the ship about 170 feet long. Transportation of midships frames is possible only by barge or over clear roads. Considerable thought was given to splicing the frames in some way to make them transportable. This idea was abandoned in order to retain the advantage of a continuous laminated member. Shipyards were therefore given the option of subcontracting or doing their own laminating. Disadvantages of the latter lie in the number of inexperienced firms that had to learn a difficult technique and the added equipment that was necessary.

The diversity of the program placed a burden on the Navy inspection system. The art of laminating for marine service had lain dormant since 1945 so that the process was new to Navy inspectors. Although tests of samples from production are useful to assure quality, careful process inspection is also required. A system of quality control by the manufacturers and inspection by the Navy had to be established from scratch.

The requirements and procedures used in the current quality control program for marine laminating evolved from an extensive series of tests and engineering analyses. The purpose of all quality control procedures is to establish limits of acceptability which will insure the production of satisfactory items. In the marine laminating program, this quality control must cover an extensive field as a large number of operations are involved before the final product is obtained.

Evolution of Quality Control Program

The bonding of wood for marine laminating is a specialized technical operation and, as such, must be designed by a precise series of tolerances. This means that all the steps in the laminating procedure such as surfacing, glue spreading, etc., must be clearly defined and rigidly adhered to. With the best of specifications and intentions it is possible for a laminator, either through lack of understanding of the operation or for other reasons, to make mistakes in his laminating procedure. Since the importance, as well as cost, of the members involved in this program is substantial, the Bureau of Ships of the Department of the Navy decided that a quality control program on the actual production was necessary. In the selection of the procedures to be used, it was necessary to select tests which would adequately inspect the laminated materials but would not cripple normal production rates.

An extensive amount of work has been done on methods of determining the shear strength of adhesives as well as their durability under various service conditions. As a result of this extensive program, it was found that, to determine the strength of the adhesive lines in heavy laminating construction, the block shear specimen gave the best indication.

In the quality control program, in order to obtain an evaluation of each of the glue lines involved, a so-called "staircase" type of specimen was developed. This permitted the testing laboratory to cut a sample from each submitted blank and subsequently to test each glue line with a minimum of machining effort.

The block shear testing was found to give a good indication of whether the laminating procedure was sufficiently adequate to achieve high dry shear strength. However, an extensive series of tests showed that the correlation between dry shear strength and the ability of the members to withstand severe conditions was not too good. There are many technical reasons for this. As a result, the various testing laboratories have developed an accelerated aging cycle which would give a reliable indication of what service performance could be expected from the laminated members.

Accelerated aging tests required much effort in their development since their validity depends on correlation with actual existing service performance. Fortunately for the current laminating program, much of this correlation has been achieved since the introduction of durable adhesives for marine laminating. All the answers have not yet been obtained, but enough information has been accumulated to permit the establishment of tests which are good indicators of adequately or inadequately bonded joints.

The basic approach to this problem was to take matched laminated material, subject part of it to accelerated aging tests, and place the remainder under actual service conditions. When results of the accelerated aging tests and those obtained after a long period of time in service were correlated, it was found that a definite trend was obtained. In other words, those members which showed up excessively poor in the accelerated tests were also poor under service tests.

(Continued on page 46)

1. FORK LIFT TRUCK unloads incoming truck of lumber in package lots.

2. THREE LOADS place on conveyor that leads to double-end trim saw.

"We Never Lift A Board"

How simple material handling devices and procedures help keep small concentration yard operating at a profit.

by Walton R. Smith
Walton Lbr. Co., Mebane, N. C.

There is a revolution in the lumber industry and it's high time. No longer can we do things the old way, the hard way, with the margin between stumpage costs and lumber prices narrowing and the cost of labor ever increasing. The lumber plant that stays in business must streamline and modernize its organization and its operation, whether it be handling ten million feet a year or half a million. My company is only two years old from an oat field, built with the motto of "Never lift a board". Through some pleasant and some bitter experiences we have learned some lessons that might prove helpful to others.

So far our business is a simple operation, a concentration yard that buys green or dry yellow poplar lumber only, selling a high precentage of it to the local furniture plants. Since all lumber is bought on grade and sold on grade, we must operate within the rather narrow margin between the green purchase price of poplar lumber and the wholesale price of dry poplar lumber. This margin will continually vary by grades and with fluctuations in the market but it averages between $10.00 and $20.00 per M. bd. ft. With this margin we must pay labor, salaries, and overhead and hope that some is left for profit. Our salaries and overhead are pretty well fixed but the labor fluctuates with the amount of lumber handled and the way it is handled. Our profit therefore must also be dependent on weekly production and labor costs. The scope of this paper is confined almost entirely to the use of mechanical devices to reduce labor costs.

This paper was originally presented at the F.P.R.S. meeting at Milwaukee in June, 1952.

Truck to Trim Saw

All lumber is bought f.o.b. our yard and is unloaded from trucks and trailers by our Gerlinger nine-ton fork lift truck, marked as to ownership, and placed on the yard to be handled in its turn. (Fig 1) The fork lift truck keeps two or three loads of lumber on the dead roll conveyor leading to the double-end trim saw. (Fig. 2) The man who feeds the lumber to this saw can pull the entire package of lumber up to his working space by a simple crank and cable. As he operates the trim saw, he will feed boards of one length for a time, change his saws by a hand crank to accommodate another length and so on, not trying to change the saws for every board as he comes to it. Although this type of trim saw is much slower than the automatic type, our man can feed from 2,500 to 3,000 feet per hour, about the maximum that the grader can handle under our set-up. Trim ends fall to a conveyor which carries them to an elevated bin; there they can be dropped into a dump truck for delivery to the local trade for stove wood.

From the trim saw, the lumber falls on the grading chain which is about 15 feet long. Near one end of this chain is a stop that can be depressed with a foot pedal. The board lines up against this stop, and the chain continues to move under the board. Several boards can back up against this stop awaiting the attention of the grader. (Fig. 3)

A lumber scale board has been developed by the writer that eliminates the necessity of the grader using the conventional lumber scale stick. As the board comes to rest against the stop, the end towards the grader is aligned directly over the scale board so that at a glance the grader can determine the scale of the board in board feet, and if he wants the information he can also see instantly the length of the board in feet and the width in inches. (Fig. 9) At a glance the grader determines the scale and the grade of the board on the face showing; he then flips it over the stop and determines the grade on the reverse side. He marks the grade of the lumber on the board with a crayon and lets it go on the chain as he tallies the footage by grade on the tally sheets on a suspended tally board at his right. There is no lost motion on the part of the grader and he has a thickness guage and other necessary instruments available to assist him in his work. The grader determines the speed of the entire operation.

Grading

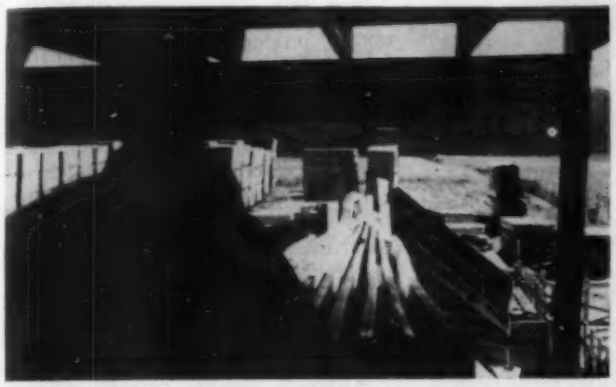
We can increase production by 28 percent on the grading chain by giving the grader a tallyman, but on the basis of total man hours of labor per M feet graded, we lose 14 percent by adding this tallyman. We operate the system both ways, depending on the amount of incoming lumber to be graded.

From the grading chain, the boards are picked up singly by a lug chain which carries them through a dipping vat for stain prevention and then up an incline to a platform 14 feet above the ground where they are dropped on a ramp for attention of the sorter. (Fig. 4)

Our lumber sort was designed by the writer after an inspection of several edge sorters operated by chain

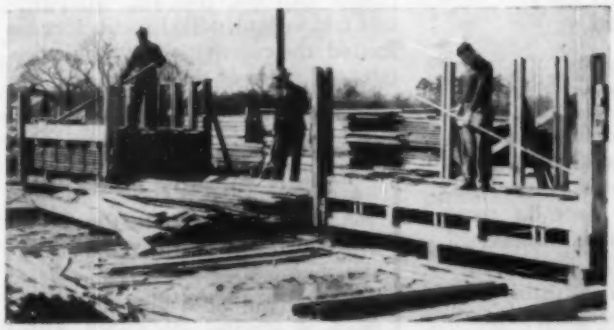
3. **SCALE BOARD** helps grader, grade, mark and tally the green lumber.

4. **DIPPED BOARDS** are conveyed to sorter from ramp (foreground).

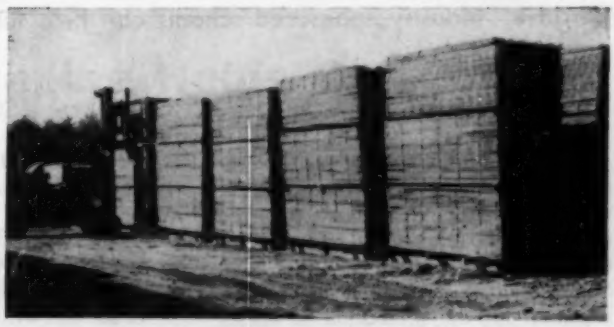


5. **GRAVITY EDGE-SORT** lumber conveyor drops board at right rack.

6. **STACKING BIN** has fixed sticker guides on inside —guide outside.



7. **PORTABLE STACKING BINS** with guides can feed from ends or front.



8. **EXCELLENT PILES RESULT** from use of bins; better lumber is result.

driven live rolls. This lumber separator is of the edge-sort variety but is built on a slope and operated by gravity. After some experimenting, it was found that green 4/4 poplar boards would roll at about the right speed on edge on ball bearing rolls with a slope of one inch to the foot. Our edge sort is 100 feet long and has ten separations, dropping lumber onto five platforms on each side of the sort. Conveyor rolls of stock sizes are used with variations in width to allow for the narrowing of the sort towards the end. (Fig. 5)

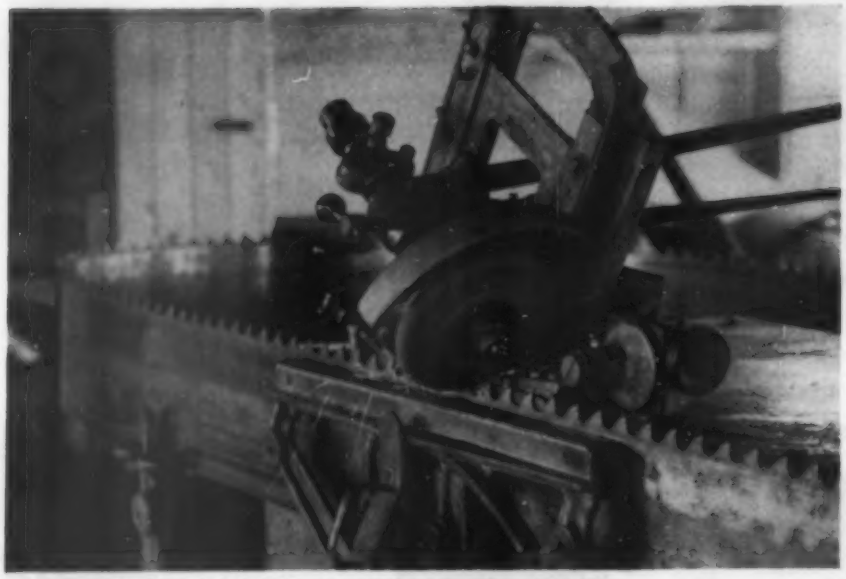
With this lumber sort, any laborer can be trained quickly to put the boards on edge in the right slot. The lumber then rolls to the end of that slot where it hits an incline that stops its forward motion; it then flops over and falls to a platform above the stacking bin. The trick of having the lumber fall off just right in a position to be picked up by the stacker, without endangering him during the fall, causes considerable experimenting. We believe we have about licked the problem but we are still making changes.

Stacking

The lumber stackers (two can usually handle the output) work in the bins which have permanent sticker guides on the inside, one solid end, and a sliding sticker guide on the outside (Fig. 6) They merely have to pull a board *down* from the platform at shoulder height, drop it on top of the package on which they are working, and push it into place with their foot. Stickers are conveniently placed in a rack that can be reached from the package. Packages of lumber are built 12 feet long, six feet wide, and four to five feet high, all box-piled with nothing but full length boards on the outside and with all stickers in perfect alignment at two-foot intervals.

When a package of lumber is completed, the fork lift truck picks it up from the bin, carries it to the yard, and stacks it three or four packages high.

(Continued on page 41)



SCHOOLS ARE NEEDED to care for saws like this one.

Better Trained Men--How to Get Them

Trained workmen for saw and knife maintenance are imperative. Industry sponsored schools can help fill need.

By Paul Graham

Since the appearance of various articles on saw and knife maintenance, numerous letters have been received regarding the possibility of organized courses of instruction in this field. Some have asked why a national association for the promotion of standard practice in saw and knife maintenance has not been organized. Others have suggested establishment of a school or central institute with extension courses. Unfortunately the majority of the writers fail to suggest any practical means for achieving the various aims projected. Definite need has been indicated but detailed procedure for finance and operation of such an enterprise is most important.

Most saw and knife manufacturers maintain customer service for advising them upon proper maintenance and use of their cutting tools, and maintenance equipment distributors maintain engineering services to process problems submitted to them by users of their equipment. Very few text books, however, are available on the subject of proper tool maintenance. At the maintenance level there have been a few sectional get-to gethers by saw doctors for the discussion of current saw fitting problems. As far as can be determined, very little has been done at these meetings towards standardization of saw and knife maintenance practice or training of young men in this field.

From the writer's personal contacts with saw and knife maintenance men in the field, it would appear that such a wide divergence of opinion exists in the proper manner to fit up any single cutting tool that an association loosely organized of members of this craft could not be moulded into a cohesive group, dedicated to the standardization of saw and knife maintenance practice, without the able guidance of experienced manufacturers of cutting tools, machinery and maintenance equipment and the wholehearted interest of the woodworking industry.

A more sensible approach to this problem has been suggested by a few woodworking industry leaders. They believe the tool, machinery and maintenance equipment manufacturers have the biggest stake in standardized saw and knife maintenance practice as many of their products are currently being ruined or condemned by incompetent saw and knife maintenance men. Therefore, it would seem logical to assume that they have a definite responsibility and should have a financial interest in training maintenance men in the proper handling of their products in the plants where they are to be used.

This should not be confined to saw and knife manufacturers alone. A cutting machine may be condemned as unsuitable for an operation when the inferior quality or quantity of production is being caused by an improperly fitted cutting tool. An unskilled or ignorant operator cannot obtain proper results from maintenance machinery and equipment, even though it may be automatic in operation, and the use of the wrong grinding wheel or file may well condemn a particular product against further use when the product itself is not at fault. It is unfortunate but true that few plant executives possess sufficient tool maintenance knowledge to pass adequate judgement on the merit and efficiency of their own tool maintenance department.

Although various private interests have attempted in the past to establish schools or courses for training in proper tool maintenance, equipment cost and lack of skilled instructors has limited their activities to fundamentals, and some of these were not well

Start Already Made

A progressive step in the direction suggested by Mr. Graham is already underway. On page 9 of the June issue of Wood and Wood Products a joint announcement by the University of Michigan and North Carolina State College tells how these schools have established carbide training schools—effective this year—to standardize carbide saw and knife maintenance in the industry.

This cooperative program entered into by the carbide saw and knife and grinding equipment manufacturers may turn out to be the first step toward the broader industry program for which Mr. Graham herewith makes such an excellent appeal, and which deserves the whole-hearted support of the woodworking industry and the manufacturers of saws, knives and equipment. *The Editors.*

taught. A sounder plan which might be used to raise tool maintenance to a professional level and to attract the interest of young men to enter this profession, would be the establishment of a school or central institute for extension instruction with the financial backing and active participation of interested manufacturers of cutting tools, machinery and tool maintenance equipment.

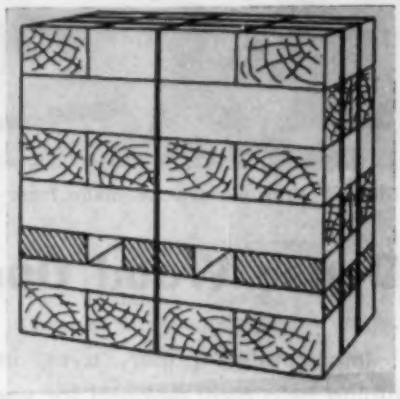
Research and instruction cooperation between colleges, government agencies (such as the Forest Products Laboratory), technical associations (such as tool engineers), and trade associations should also be taught. The woodworking industry should be invited to make known its needs and problems. A collective meeting of the minds of these representatives could well result in a coherent program to provide proper tool maintenance instruction, beginning with fundamentals and extending through specific tool maintenance to the standardization of tool maintenance practice as well as research for improved maintenance and cutting procedure. All of these representative groups include within their respective organizations qualified experts who might make valuable contribution to the overall program, at least on a part-time basis if they could not be released for permanent participation.

Lest the wrong impression be created here, let it be said that the woodworking industry should not and does not expect the groups mentioned to wholly subsidize such a program. It is the writer's opinion, shared by many in the woodworking industry, that should these groups undertake such a program, the woodworking industry would be pleased to subscribe a nominal fee for enrollment and would sponsor men from their plants for the school, or for field courses should the institute extension plan be adopted. This is currently being done in the case of lumber grading and inspection and kiln drying courses all over the country. The industry would also be glad to subsidize research for their particular problems in the wood cutting field.

Thus it would seem that apart from the specific advantages accruing to manufacturers of tool, machinery and maintenance equipment in the proper treatment of their products in customer plants, this plan would equally benefit the woodworking industry. Competent tool maintenance instruction for their employees would result in better tool performance with less machine down time and longer tool life. If all available performance and maintenance information could be channeled to a central clearingshouse for study, it is conceivable that tool maintenance practice could be standardized within a reasonable length of time with the expert analysis available. Research on problems submitted by the woodworking industry might well lead to the development of improved cutting tools and cutting procedure for the benefit of all.

All confusion in the field of cutting tools does not lie within the user-plants of the woodworking industry. Extensive research in the field of saw standardization by the Wood Industries Division of ASME is an indication of the variance in arbor sizes, tooth shapes, etc. in the saw field and cutterhead standards also reflect some of the same confusion. It is not presumptuous to assume that with the cooperation of all tool, machinery and maintenance equipment manufacturers that standardization in design and operation might also result with obvious benefits to maker and user.

FORK TRUCK, loads bundle of shook.



STACKING PATTERN: lumber.

Steel Strapping Helps Cut Costs

Self-palletized loads cut space for storage, eliminate costly pallets.

The Menominee Box and Lumber Company of Menominee, Mich., now loads freight-car shipments of box shook in 4 to 5 per cent of the time previously required. The creation of a method of forming and handling large unit-loads has dramatically reduced loading time to a small fraction of the 50 to 60 man-hours previously required to man-handle the 2500 small bundles of shook needed to fill each box car.

An average box car shipment of 30,000 board feet of lumber now contains only 75 bundles, stacked two high and two wide. This consolidation is possible because the shook bundles are secured with steel strapping. The lift trucks permit handling of unit-loads weighing in excess of 1000 lb. In addition, a fork-truck handling system, necessitated by the size and weight of strapped shook bundles, increases the usable storage space and stacking height.

Freight savings, storage space and stacking height can be further increased by eliminating the pallets ordinarily used when handling strapped bundles of shook, thus cutting dunnage to the bone and reducing space requirements. The Menominee Box and Lumber Company, after considerable experimentation, designed stacking patterns for just this purpose. The variety of shook sizes required separate patterns for each type of load. However, all bundle designs have one thing in common —voids created within the bundle to allow entry of the lift fork tines.

In most cases, the predetermined voids are created by using a natural stacking pattern. Where this is not possible, voids are formed by tubular dunnage or cross strips of shook. These same principles may be adapted with equal effectiveness to other commodities shipped in bundle form where a definite stacking pattern may be achieved.

FIG. 1: Finished articles made from dense wood.

Dense Wood Opens New Markets

Impregnated paper, dyes, imported veneers and glued tubing help meet demand for varied appearance in compregs and impregs.

By George E. Powers

Formica Co., Cincinnati, O.

The use of impregnated compressed woods has been known in the United States for about fifteen years. It has been used abroad for even a longer time. In the past several years a considerable expansion has taken place in the use of these materials as their properties have been more widely recognized and manufacturing techniques have improved.

Most of these materials are a variety of compreg,[1] or impreg[2] and in some cases are combined with standard paper base laminated sheet. Moisture resistance, mechanical strength, electrical insulating quality, attractive appearance and low cost are combined to make a material of wide usefulness and general appeal.

Perhaps the most spectacular use of compreg has been its application in cutlery handles and similar products. (See Fig. 1) In this case eye-appeal and water resistance are required. "Stratawood" is the name given to the particular variety which has these properties. In order to bring about a uniform product both from the color and moisture resistance standpoint "Stratawood" is made in 4-sided steel molds which are ground to extreme accuracy and parallelism in order to produce uniform pressure. These molds are fitted with side retainers as well as top and bottom faces (i.e. 4-sides). Thus, the wood is restrained from spreading sidewise under pressure. No restraint is required in the end grain direction. The molds are also fitted with stops which regulate the thickness of the finished board. By accurately weighing the impregnated veneers delivered to each mold cavity, it is possible to regulate the density, water resistance, appearance, etc. of the board produced. Since the veneers cannot spread sidewise, the density is uniform across the entire width; hence no material is lost in trim and uniform quality is assured. This type of molding procedure has been in operation for over two years with resultant economy and quality improvement.

Molded "Stratawood" has found wide acceptance in cutlery handles, hair brush and nail brush backs, women's coat buttons, pen and desk sets and a variety of other applications where eye appeal is important.

The applications just described fall into the novelty field to some extent. As a result designers are searching continually for new forms which will be attractive and yet retain the qualities of the "Stratawood".

Considerable effort has been devoted to the development of such varieties in the laboratory.

Varieties of Wood

One of the simplest devices is the use of different species of wood. Investigation has shown that almost any wood can be used satisfactorily with the exception of resinous types such as pine, hemlock, etc. Such woods as poplar, beech, gum, hickory, ash, oak, basswood, sycamore and cottonwood are satisfactory for the manufacture of this product. When the proper amount of resin is added to each species and the finished sheet brought to the correct density, all of these woods possess about the same properties insofar as water resistance, appearance, etc. is concerned. Considerable variation in mechanical strength is apparent.

Naturally, the grain character of the original veneer influences the appearance of the finished ornamental handle. Such woods as oak and hickory have a pronounced wide grain on the flat surface and an attractive, flecked appearance on the edge. Unfortunately, the spring and summer wood varies greatly in moisture resistance with the result that these woods will develop a pronounced "washboard" condition when boiled in water.

Birch and maple are most commonly used since these woods exhibit interesting grain but no "washboard".

Gum, tupelo and basswood have such a fine grain structure that they are rather uninteresting in small sections. Their use will probably be limited because of this consideration.

Cost of the wood veneers also plays an important part in the choice of a suitable wood. Many veneers which are low in cost on a square-foot basis are quite costly when considered on a weight basis. Thus birch which is rather costly on a square foot basis is a very dense wood and consequently is economical on a pound cost basis. Many species which are otherwise interesting cannot be considered be-

[1]Forest Products Laboratory resin-treated, compressed laminated wood. Forest Products Laboratory Report No. 1381.

[2]Forest Products Laboratory resin-treated wood. Forest Products Laboratory Report No. 1380.

This paper was originally presented at the F.P.R.S. meeting at Milwaukee in June, 1952.

cause their low density brings about a high pound cost.

When all factors are considered, birch and maple are the most satisfactory woods now available and probably will continue to be for some time.

Interest has been developed in foreign species, particularly rosewood. Rosewood compreg has been used successfully in guitar fret boards where its greater stiffness and moisture resistance make it superior to natural wood. Guitars fitted with these fret boards are reported to remain accurately tuned over long periods of time under varying atmospheric conditions. In this case rosewood was used because of its color. This choice was dictated entirely by the users' desires. It is likely that other foreign woods, especially mahogany, will be of interest because of their color. At the present time such woods are not economical since they are available only in 1/28-inch sliced flitches to serve the furniture trade. Such flitches do not handle well in the "Stratawood" process since much of the veneer is lost in cutting. Recently it has been possible to obtain rosewood in rotary cut veneers. Mahogany has long been available in rotary cut. Those foreign woods which are available in large diameter logs and thus lend themselves to rotary cutting are likely to become more important in decorative types of compreg in the future.

Use of Dyes

Another means of creating interest is by the use of suitable dyes in the impregnating resin solution. In the case of "Stratawood" this is an aqueous solution so the dyes must be water soluble. In addition, they must withstand the resin curing temperature (up to 165° C.); be light-fast and non-leaching in the finished product. There are very few dyes which will meet all of these requirements. It is interesting that so many have already been found. Suitable black, brown, red, orange and yellow dyes are known. Green, blue and violet are not available.

Most of the color in "Stratawood" comes from a partial collapse of the wood structure with an ensuing partial translucency. In most cases the dye is used to tone the natural red-brown color imparted by the wood and resin. In a few cases vivid reds, oranges and yellows have been produced although such positive colors are not usually desirable. Where vivid colors are wanted, such woods as poplar, black gum and tupelo are most suitable. Where darker tones in black or brown

FIG. 2: Dense wood board, used in industry for jigs, dies and patterns.

are desired, birch and maple are quite satisfactory. None of the dyes colors the entire wood substance; some parts are dyed while others retain their original natural color. This acts to intensify the grain contrast and often produces very striking effects.

Paper-Wood Laminates

In a further attempt to gain eye-appeal, impregnated paper has been used in connection with impregnated wood; the entire assembly compressed and bonded in one operation.

Two variations have been used. In the first a dyed kraft paper (usually black or red) is alternated with wood veneers to give a striped effect on the edge. Several plies of paper are used so that the thickness of the paper stripe is the same as that of the wood when viewed from the edge. This process is very simple and inexpensive. It yields a product which promises to be of interest in the cutlery handle field.

The second variation consists in applying decorative printed paper sheets to the surface of the "Stratawood" board. Again the entire assembly is compressed and bonded in a single operation. In this instance the decorative pattern is one of a standard line originally intended for use in laminated plastic table tops and is provided with an overlay sheet to protect the pattern. The decorative paper assembly is impregnated with melamine resin and bonded directly to the phenolic resin in the wood. Most striking effects are obtained in this case since bright and vivid colors as well as patterns may be used on the surface. Unfortunately, this assembly is rather expensive.

It is possible, of course, to combine the decorative surface and striped edge effect. All of these combinations have been produced commercially. The striped edge type has not only been used in cutlery, but as an insert on the striking face of wooden golf clubs.

Ply Direction

Probably the greatest eye interest can be developed by proper use of contour shaping of the particular item under consideration. Those designers who have taken advantage of the contour lines developed by cutting through the wood plies have been highly successful, while those who design without regard to ply direction have developed less attractive pieces.

For instance, a desk fountain pen set may be mounted on a block approximately 3 inches by 6 inches by ¾ inch. Such a block is normally cut from a board which is ¾ inch thick and has plies running parallel to its faces. Thus the top of the block presents a face consisting of a single ply of rotary cut birch. This is rather uninteresting. If the top of the block is cut at an angle so that the top and bottom faces are no longer parallel, then several plies are partially exposed

(Continued on page 52)

TROPICAL HARDWOODS like these are practical to import.

Practical Facts on How to Use Imported Hardwoods

Color, hardness, and behavior on veneer cutting machines determine practical use of tropical woods. Part I

by Robert W. Hess
The Mengel Co.

The growing scarcity of high quality timber among our better hardwoods has, in the last few years, stimulated an unprecedented importation of tropical woods into this country. During the past year more than 100 species of tropical woods were imported into the United States. The majority were intended for the manufacture of veneers and plywood, either on a production or a trial basis. On the basis of past performances, it is safe to predict that few of these will get beyond the trial stage and only a very small percentage will reach volume production. In a previous paper[1] the problems connected with the harvesting of tropical timber were discussed and some solutions suggested. Here we will examine the woods with reference to their use for veneer and plywood.

While it is manifestly impossible to encompass the properties of several thousand potentially useful tropical woods in simple generalizations, a review of properties in comparison with familiar native hardwoods will simplify discussions of individual tropical plywood timbers. When properties are adverse for a particular use, it is a usual practice to combine them with defects, prevalent or otherwise, into a list of faults. Ignorance (lack of information) invariably contributes at least one fictitious detrimental property to each little known tropical wood. Little wonder then that new woods tend to acquire bad reputations in the early stages of trials. Every wood has more than one feature that detracts from its applications or tractability. We have learned long since how to select our better known woods, determined how and where to use them and learned to respect their limitations. For more common applications it would not be difficult to select a dozen tropical woods with properties equal to or better than those of native woods now in use. On the other hand, it would be impossible to match all the properties of any two woods. There is no "birch" in the tropics, just a few woods suitable for many uses for which birch is commonly used.

The question of weight, or density, is commonly a point of discussion when tropical woods are considered. While it is true that woods of all density classes are represented, it is equally true that many of the fine tropical woods are harder and heavier than woods commonly used in this country. Fortunately, these heavy woods often have shrinkage capacities no greater than those of some of our well-known furniture woods, indicating stability in service. These denser woods sometimes pose problems in machining and fastening that may be deterents to their use, although veneer slicing or rotary cutting would be likely to be rated as impossible with only the densest kinds.

One of the very common features among tropical woods is the presence of interlocked grain in uniform layers, producing a stripe figure on the quartered surface. Even some of the soft, light-colored woods have a marked quarter stripe which can readily be accented with stain or filler. In some of these woods, care is required in machining or sanding quartered surfaces to prevent tearing or roughening of fibers in alternate grain layers. When the grain slope is steep (at a large angle with the surface) and the pores large, there is often a tendency for glue to bleed-through in thin veneers. In rotary or flat-sliced veneer, of course, a meandering grain commonly results from cutting through two or more of these growth layers.

Practically all tropical hardwoods are diffuse-porous, showing a pore pattern of the general type found in maple and mahogany. Only a few, such as teak and Spanish cedar, are weakly ring-porous showing (on the flat-grain surface) a mild pattern somewhat like ash or oak. The pores of the majority of the useful tropical hardwoods are larger and fewer than those of our common hardwoods (maple, birch, poplar) and often they make a distinctive pattern on the flat-grain surface. Colored fillers can be used to accent these distinctive grain characteristics. Many otherwise commonplace tropical woods could be made most attractive with proper finishes, developed to exploit grain patterns.

One of the most discouraging of the artificial "defects" that most tropical woods have inherited is that of color. In recent years the United States market has become increasingly restrictive as to acceptable shades of color. A blond wood, or one that looks like birch, or a wood that can be substituted for white oak would find a ready market. A beautiful reddish brown, red, medium brown, or dark brown wood faces most reluctant consideration. Despite the fact that the much sought mahogany, cherry, and walnut

(Continued on page 50)

[1] This paper was originally presented at the F.P.R.S. meeting at Milwaukee in June, 1952.

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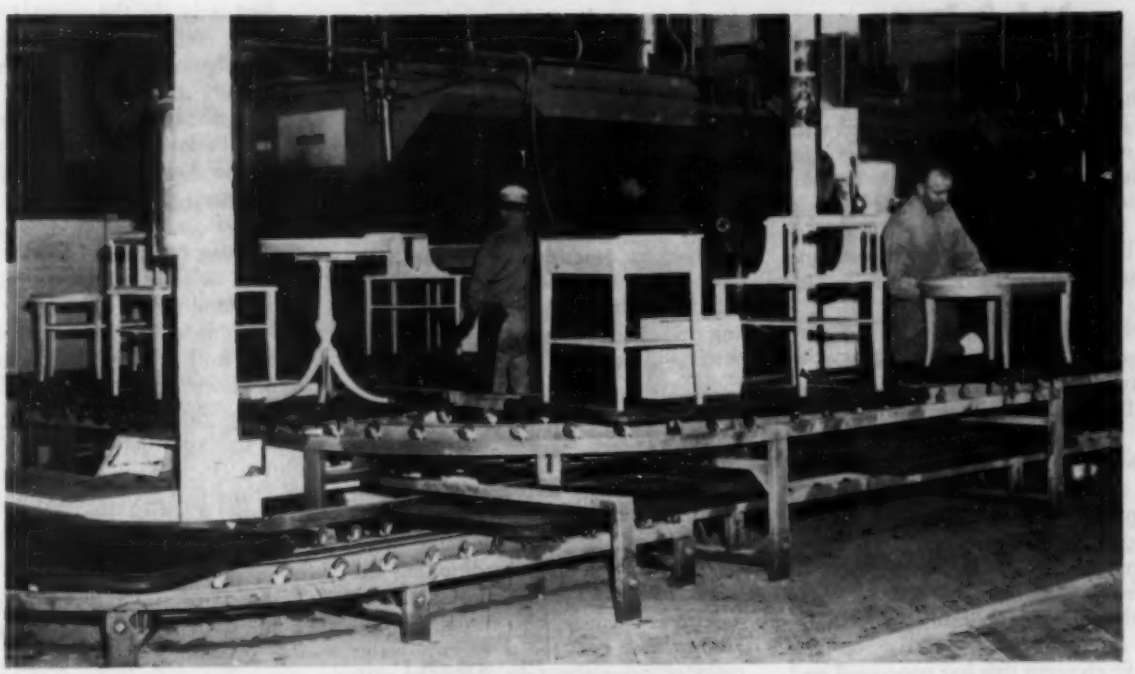

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Proper Seasoning Steps Up Furniture Output

Modern kilns, modified kiln schedules and practical moisture control meet demands for large production.

by S. D. Pryce
John Widdicomb Co., Grand Rapids, Mich.

The factors bringing about changes in this field are closely associated with the ever increasing need for greater production. These are: (1) The increased demands for consumed goods; (2) Ever increasing labor and material costs; (3) Larger fixed costs and overhead; (4) Need and desire for more rapid capital turnover.

Specific changes or advancements in equipment and materials designed to satisfy this production pressure are: (1) Development of forced draft kilns with automatic controllers; (2) Expanded and diversified use of synthetic resin adhesives; (3) Development and acceptance of bonding equipment, i.e. hot presses, high-frequency bonding equipment and tapeless splicers.

We all recognize the first group as the theme of our industrial society. Our attention here will be on the specific changes this has prompted and the manner it reflects on the subject at hand.

Fan Kilns

Fan kilns date back to the early part of this century, but their general acceptance by the furniture industry has come only in the last few years. This acceptance of new equipment brought with it new and more radical thinking with regard to the kiln drying of lumber and, in turn, brought forth a new type of kiln man, an operator who thoroughly understands his equipment and adjusts his thinking with regard to new schedules and correct use of total kiln facilities.

A sizable number of these men have taken their training at the Forest Products Laboratory at Madison, Wisconsin, or learned from such men and /or from literature released from that prime source. Many others are kiln company trained. Most are wide awake, open-minded, full-time operators—they have to be.

The acceptance of fan kilns has changed methods of air circulation and kiln control, reflecting on both rate and quality of drying and initial moisture condition of stock handled.

Interior service moisture standards for wood have in the past dictated and still do dictate the proper moisture content of wood being processed. However, a new and more exacting approach has been introduced with the use of synthetic resin adhesives. These resins have materially altered the degree of kiln drying, that is the allowable minimum of moisture content to which the stock should be reduced.

Previous practices of drying to a "bone dry" condition are no longer valid, and if followed can be damaging, particularly with regard to the strength and durability of bonded members.

Panel assembly and blocking with casein, vegetable and animal glues called for mixes that comprised from 1¼ to more than twice as much water as glue solids. Setting was essentially by moisture loss. This glue-line moisture was a factor in conditioning the panel to service conditions.

This is not true with resins. Formulations now call for a resin-to-water ratio of approximately 2 to 1, with water a chemical element of the whole and is essential to the complete polymerization or cure of the adhesive. Wood moisture plays a part by aiding this reaction or at least by being present in such an amount that moisture is not rapidly drawn from the glue line, thereby allowing it to take its part in completing the necessary chemical reaction.

Not only do the uses of resin adhesives dictate, at least in part, the material moisture content limits, but also, they demand a more exacting control of plant conditions to maintain the stock within limits.

Once dried, lumber and veneer must be held within the required moisture content range while awaiting the gluing operation. Also, parts must remain as close as possible to the acceptable moisture contents at the time of machining so as to assure close joints and satisfy the space-filling intolerance of these resin adhesives.

Most practices must allow some time to elapse between machining and gluing. It is to insure stability over this time that controlled conditions are exceedingly important.

The advent of precision bonding equipment such as tapeless splicers, hot presses, and high-frequency electronic bonders with their more exacting operating requirements call for more precisely manufactured wood parts. Such precision-made parts, once well manufactured, retain the required dimensions only if held within the required moisture content limits throughout the manufacturing process.

TABLE I.—A COMPARISON OF DRYING RATES USING TWO SCHEDULES[1]

Current J. W. Co. Schedule—¾-inch red oak

Moisture Content Percent	Dry-bulb (Degrees F.)	Wet-bulb (Degrees F.)	Relative humidity Percent	Time at set Hours
68.9 to 45	116	110	82	98
45 to 35	116	108	76	39
35 to 30	120	110	72	24
30 to 25	126	110	61	26
25 to 20	132	111	50	22
20 to 15	145	118	44	32
15 to 13	157	122	35	15
13 to 6.8	180	130	26	29
				Total 285 or 11.9 days

Total moisture-content reduction 62.1 percent; average per day 5.2 percent.

Forest Products Laboratory Schedule (T4-D2)

67.6 to 50	110	106	87	123
50 to 40	110	105	84	113
40 to 35	110	102	75	31
35 to 30	110	96	60	25
30 to 25	120	90	31	41
25 to 20	130	50	10	25
20 to 15	140	90	14	27
15 to 7.8	180	130	26	49
				Total 434 or 18.1 days

Total moisture-content reduction 59.8 percent; average per day 3.3 percent.

[1] Comparison of actual ¾-inch red oak *(Quercus borealis)* kiln charges using the schedule from Forest Products Laboratory Report D1791 for 4/4, 5/4 and 6/4 stock and a modification at the John Widdicomb Company. Moisture control was by use of control samples.

Knowing these factors that have been introduced and that dictate what moisture content conditions are most desirable, and in most cases mandatory, for good quality manufacture, let's review the equipment and actual practices set up by our concern to satisfy these conditions.

Kiln Drying

The kiln equipment at the John Widdicomb Company consists of four end-piled, internal-fan kilns, supplemented by four natural-draft vapor kilns. Box-piled bunks are built at the siding, and are handled both manually and by power transfer. Bunks are stagger-loaded in the kilns to utilize air circulation to the best advantage within practical limits. Hinged overhead baffles extend from the ceiling to the edge of the bunks to inhibit excessive short circuiting of air over the loads. With a 2-inch plenum and a 24-inch walkway between bunks we are not convinced we have the best possible circulation uniformity; however, moisture uniformity checks and velometer readings have failed to show gross inequalities.

The heater coils are headed and drained at the center of the kiln, two banks on either side. Each bank consists of fifteen one-inch return-bend lines extending from the center to either end of the kiln. Header and feeder lines are insulated and dry bulbs are located one-fourth of the way from the loading end of the kiln, all with the purpose of obtaining uniform temperature conditions and accurate control. Kiln controls are actuated by compressed air and have liquid-filled control bulbs. This physical set-up is typical. Our drying is tuned to production demands, but quality is an equally important consideration.

To meet production demands our lumber is scheduled into the kilns as carefully as possible and our drying schedules are flexibly applied, based upon the material going into the kiln, its moisture content and critical conditions applicable.

Our schedules are seldom static for we are constantly experimenting with temperature and wet-bulb depression in an effort to get the work done most quickly without undue degrade.

This flexible approach isn't haphazard and requires a tremendous amount of close checking of stock in the drying operation and in the subsequent manufacturing process.

We have spent about six months using the new Forest Products Laboratory schedules, observing results and comparing them with past performances. Our findings seem to support our initial impressions, namely that initial drying progress is slower when the Laboratory schedules are used due to restricted dry-bulb temperatures and wet-bulb depressions. Intermediate and final drying, however, is good.

These facts have been our cue for schedule modification. Table 1 shows our operator's schedule for ¾-inch red oak *(Quercus borealis)*, a blend of several recognized commercial schedules, plus his own ideas, in comparison with the new Forest Products Laboratory Schedule for 4/4, 5/4, and 6/4 red oak. The difference in drying rate at the various moisture content stages as related to wet and dry-bulb temperatures and total drying times is pronounced. Part of this difference is due to the necessity for a slower drying schedule suitable for 6/4 stock. Follow-up checks on degrade, waste and ease of manufacture showed no apparent differences between the schedules.

In analyzing and comparing these schedules and others, we feel that we are doing nothing more than the Forest Laboratory staff would recommend, in that it publishes its schedules as guides and encourages modification to fit individual operations and thickness

(Continued on page 67)

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Matchers and Edgers	20% to 40%
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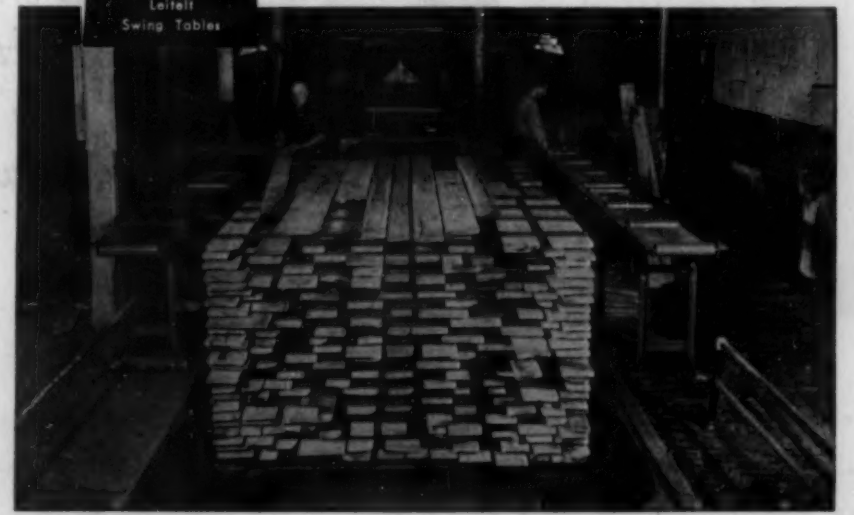

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Western Electric Company's telephone booths utilize Fyles & Rice plywood, made durable and water-proof with MELURAC 300.

Material Handling

(Continued from page 27)

We have also developed a portable stacking bin that can be used anywhere on the yard to stack incoming dry lumber, miscut green lumber as it comes from the planer, etc. (Fig 7) Our fork lift truck can move this bin around the yard either empty or filled with lumber.

Our lumber yard is in the shape of a rectangle about 500 feet wide and about 1,000 feet long. A central road goes down the middle and cross roads are at 100 foot intervals. In each of the eight sections of this yard, approximately 200 M. feet of lumber can be stacked. In each of these sections we have found it best to stack two rows of packages of lumber parallel to the arterial road with 30 foot alleys to the next two rows of packages. In this manner we can get to any package at any time and we have ample space for air circulation, operation of the fork lift truck, and protection from fire.

The packages of lumber are placed on a semi-permanent foundation of oak timbers with the bottom package of lumber at least 14 to 18 inches off the ground. Three four by fours are used between the packages, one in the middle and one on each end, all the four by fours directly over foundation timbers and in the line of stickers. In this way there is no opportunity for warpage of the lumber. (Fig 8)

During the summer months we have found it advantageous to roof each pile of lumber. This is done by placing four by fours on the top of the pile and using cull boards to cover it. These boards are arranged to extend at least 6 inches on the ends and sides. Such a cover definitely helps to prevent surface checking from the sunshine and an excessive moisture pick-up from the rain.

Local Delivery Arrangements

Arrangements with a local furniture plant that purchases a good portion of our better grades of lumber, permit us to deliver the air dried lumber to the furniture plant "on sticks". We place a complete package of lumber on sticks on our truck with the fork lift truck. This is delivered to the furniture plant where it is picked up from our truck with an electric hoist and placed directly on their kiln truck. Two of our packages make one complete kiln truck. A trick cradle arrangement was developed for placing one package on top of another on the kiln truck without leaving a space between the two packages. As you can readily see, this saves my company the cost of de-sticking and it saves the furniture plant the cost of building up the kiln trucks. Of course it is necessary for us to work out a method for accounting for the shrinkage and degrade in drying, the return of stickers, and a mutually satisfactory system of grading the lumber only one time and that on the green chain.

It is necessary for us to maintain a double surfacing planer to size miscut lumber, to dress low grade lumber for shipment to box plants etc., and to dress low grade lumber for the local building trade. We also have a straight line rip-saw which we have used primarily for manufacturing our own lumber sticks, and a circular resaw with which we remanufacture much of the narrow low grade lumber into ⅞-inch crating.

Stickers

We have manufactured most of our stickers from hickory lumber which is available on the local market at a fairly low price since the hickory is not of a very high grade. We make these stickers 13/16 inch thick, 1⅛ inches wide, and six feet long. We have about a 20 percent loss the first time we use these hickory sticks from

(Continued on page 54)

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When to Use Synthetic Resins

These finishes have excellent covering capacity, durability, and ease of curing.

by W. K. Robertson
The duPont Co., Wilmington, Del.

The use of synthetic resins in furniture finishes started several years before World War II. One of their most interesting and important uses is in low-bake finishes to replace lacquer and varnish topcoats. They have now been widely used for over 10 years on all types of wood and all ranges of furniture case goods quality from borax to Grand Rapids custom. There are probably now over five million pieces of furniture in everyday use finished with low-bake synthetics.

Such finishes are principally combinations of alkyd and urea formaldehyde resins. They contain from 40 to 50 percent non-volatile solids and are usually sold at ready-to-spray viscosity.

Synthetic finishes usually replace lacquer because of the substantial savings in cost which they offer. This is best illustrated by the following chart which assumes 100 percent efficiency for ease of comparison. Actually it is only possible to get between 40 percent and 60 percent of the material sprayed on the work, but the relationship will be the same under the same conditions.

	Sq. ft. coverage at 11-mil film thickness	Relative Percentage
1 gal. 27 % solids lacquer....	294	100
1 gal. 21 % solids lacquer....	222	76
1 gal. 42 % solids synthetic...	530	180

One coat of synthetic will usually replace two coats of medium solids lacquer and provide adequate film build for rubbing. This is illustrated by the following average film thickness comparison:

	Ave. thickness of dry film
2 single coats 27 % solids lacquer....	2.0 mils
1 single coat 27 % solids lacquer....	1.0 mils
2 single coats 21 % solids lacquer....	1.6 mils
1 single coat 21 % solids lacquer....	.8 mils
1 single coat 42 % solids lacquer....	1.5 mils

It can be readily seen that one coat of synthetic equals the film buildup of two coats of 21 percent solids lacquer. One double pass (single coat) of synthetics on tops will equal to film build of two coats of 27 percent solids lacquer. It must also be remembered that synthetics flow and level like varnish and do not follow the contour of the wood pores to the extent that lacquers do.

Experience over the past ten years has consistently proven that a saving of approximately 39 percent in topcoat material costs will be shown when one coat of synthetic replaces two coats of lacquer, with at least equal quality.

In quality the low-bake synthetics are equal or superior to the average furniture lacquer in toughness, scratch resistance and general durability and are superior in alcohol resistance and print resistance. They process as easily as lacquers and also permit faster finishing schedules.

Curing

In replacing varnish there is little or no cost savings, but a substantial improvement in print resistance and overall quality. In the case of synthetics, they reach their ultimate print resistance immediately after baking and cooling (usually two hours). On the other hand, varnish must dry overnight and even then the results are variable depending on the temper-

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This paper was originally presented at the F.P.R.S. meeting at Milwaukee in June, 1952.

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Stronghold Pacific Corp., Downey (Los Angeles), Calif.
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ature and humidity. Furthermore, synthetics retain their print resistance and are not subsequently softened by heat and humidity as is frequently the case with varnish. The quality of a synthetic finish (it is comparable to a good lacquer) is far superior to varnish in durability and cold crack resistance, alcohol resistance, scratch resistance and resistance to discoloration on aging.

Usually the early synthetics did not air dry satisfactorily but required heat to cure them. They also require the use of an accelerator to effect complete curing or drying at the low temperatures necessary with wood furniture.

A typical range of baking schedules is as follows:

Air dry flash period .....½ hour
Baking schedules to produce equivalent degrees of cure:

Relative humidity—percent		
150° F.—30	1	hour minimum
140° F.—30	1	hour minimum
130° F.—30	1½	hour minimum
120° F.—30	2	hour minimum

Air dry cooling before processing .30 min. to 1 hour

These early synthetics did not cure satisfactorily at temperatures below 120° F., but an overbake of as much as 40 percent will not hurt them.

During the baking operation, it is necessary to maintain about 30 percent humidity in the oven. This is done to protect the glue joints and to minimize any change in the moisture content of the wood. The use of today's improved adhesives, particularly of the synthetic type, has further reduced the danger of baking furniture, but the introduction of moisture is still considered necessary, particularly at the higher temperatures. It is not introduced to aid in the drying of the synthetic finish.

About the only precaution necessary in baking of synthetic finishes is that they be allowed to flash or air dry for at least 30 minutes before entering the heat. This is to enable most of the solvents to evaporate and to permit the film to set up tack-free to minimize the possibility of blistering in the baking operation. It is also necessary to allow the work to cool to room temperature (at least 30 minutes) before rubbing and processing.

Quality Improving

Probably the greatest advancement has been the introduction of a new synthetic finish of improved quality that can be either force dried at the usual schedules or air dried overnight. To differentiate these newer synthetics from those which have been in common use for over ten years, let us call the new improved products "combination synthetics" because of their ability to either air dry or bake.

While air dry synthetics have been offered periodically since the war, they have usually been deficient in some important property, such as cold crack or print resistance, lower in solids, etc. and could not be either air dried or baked.

The quality of the "combination synthetics" is superior to the older type, particularly in cold crack resistance to discoloration or aging. In these and all other respects they are equal to the best quality lacquer and have the added advantage of far better resistance to alcohol, nail polish, and similar reagents. It is particularly significant that the ultimate quality of the finish is the same regardless of whether they are air dried or baked.

These "combination synthetics" are also of the alkyd and urea formaldehyde family, although the compositions of the resins themselves has been greatly changed. They still require the use of an accelerator, usually added by the furniture manufacturer just prior to use.

These "combination synthetics" will bake at exactly the same schedules previously given for the older type, and in addition they will cure satisfactorily overnight (16 hours) at 80-90° F. or 24 hours at 70° F.

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Laminating

(Continued from page 25)

On the basis of this information, accelerated aging tests were considered to be reliable indicators of the durability of adhesive joints.

The original accelerated aging tests required 180 days to obtain the necessary results. It was seen, early in the program, that in order for any tests of this material to be practical, the length of time required should be decreased as much as possible, consistent with obtaining representative results. An extensive series of correlated tests between the original 180-day tests and a subsequent 21-day test, which involved impregnation of wood under pressure and drying under more severe conditions, showed that the 21-day test also was a good indicator of expected service conditions. A similar controlled comparison between the 21-day test and the 12-day cycle test, currently in use, showed similar good correlation.

Work is under way at various laboratories to further decrease the time required to obtain satisfactory results. However, developments of this nature require a substantial amount of time as well as extensive series of tests. The current 12-day cycle means that approximately two weeks after testing laboratory receives the test sample, the laminator can receive results which will tell him whether or not his member is satisfactorily bonded.

With the testing procedures developed, it was necessary to select the type of sample which should be evaluated in the marine laminating program. Various methods of sampling were considered. Finally it was decided that the true indication of bonding quality in any laminated piece could be measured only on a sample from the member. Thus, the current quality control program on marine laminates is based, principally, on testing samples cut from the end of the laminated members and submitted to testing laboratories where required test specimens are fabricated and tested.

Government Specifications and Procedures

The current construction program depends on materials specification for adhesives and process specification for the application of these adhesives to white oak and Douglas fir. The detailed specifications for the vessels regulate the use of the finished laminate.

Adhesives are controlled by Military Specification MIL-A-397, Adhesive, Room-temperature and Intermediate-temperature Setting Resin (Phenol, Resorcinol, and Melamine Base). Classification of adhesives in this specification is according to curing temperature, service or end use of product, and storage life. Shipbuilding makes use of Type II (intermediate-temperature curing), Class 2 (marine service) adhesives. The specification requires that the adhesive prove suitable for this service when used on white oak heartwood. Thus far no adhesive has met the requirements when cured at less than 140° F.

Laminating procedure specifications control the production of members fabricated from Douglas fir and white oak. These species were developed for this purpose because of the general availability of the durable heartwood in each. At present, white oak laminates are being fabricated according to Military Specification MIL-W-15154, Wood, White Oak, Laminated (For Ship and Boat Use). Douglas fir laminating procedures are set forth in MIL-F-2038 Fir, Douglas, Laminated (For Ship Use). Both of these process specifications have provisions for the quality of wood to be used.

Ordinarily, a commercial grade does

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not lend itself to this work and some selection and removal of defects is required on the part of the fabricator. In order to adjust the quality of the products to the performance expected in the vessel, the designers provided exceptions to the wood requirements of the process specifications. For instance, the AM421 frames provide for a high-quality surface laminate and a lower quality core. Butt joints are allowed in the core, but this technique has proved impractical. AM421 and MSB5 class specifications require laminated structural members. AMS60 class specifications allow either solid or laminated members as alternates.

The selection of the limitations on these characteristics was based on the best available engineering information developed for structural lumber and laminated material. In addition, certain specific tests on experimental ship members, fabricated from a required laminating grade, were made to substantiate the basic allowables used in designing. The tests adequately proved that the selected standards were satisfactory and the quality for the lumber in marine laminating was thus established.

Eenforcement of specifications is in the hands of the Navy inspection offices. Material manufactured for the Navy in most cases is inspected by an Inspector of Naval Material (INSMAT) representative. The Supervising Inspector of Naval Material is a Navy officer who controls inspection through a system of local representatives. Thus a manufacturer of roof arches, with a sub-contract to manufacture laminated wood ship members, has his process and product inspected by the local INSMAT representative.

Navy shipbuilding and manufacture within the private shipyards is inspected by the Supervisor of Shipbuilding (SUP SHIPS). The Supervisor is a Navy officer who commands a district office and maintains a staff of uniformed and civilian personnel to inspect the work at active yards under his jurisdiction. In this capacity SUP SHIPS inspects laminated members manufactured in shipbuilders' facilities.

The Bureau of Ships is responsible for the design, construction and maintenance of Navy ships. It controls shipbuilding methods and material through specifications. Enforcement of specifications is in the hands of the inspectors from SUP SHIPS or INSMAT as the case may be. Clarification and revision of specifications is done by the Bureau when necessary.

Certain materials purchased by the Military are required by the specification to pass tests and be listed on a Qualified Products List. Such a list is established if any of the following apply to the material:

"(a) The time required for testing after award would unduly delay delivery of the supplies being purchased;

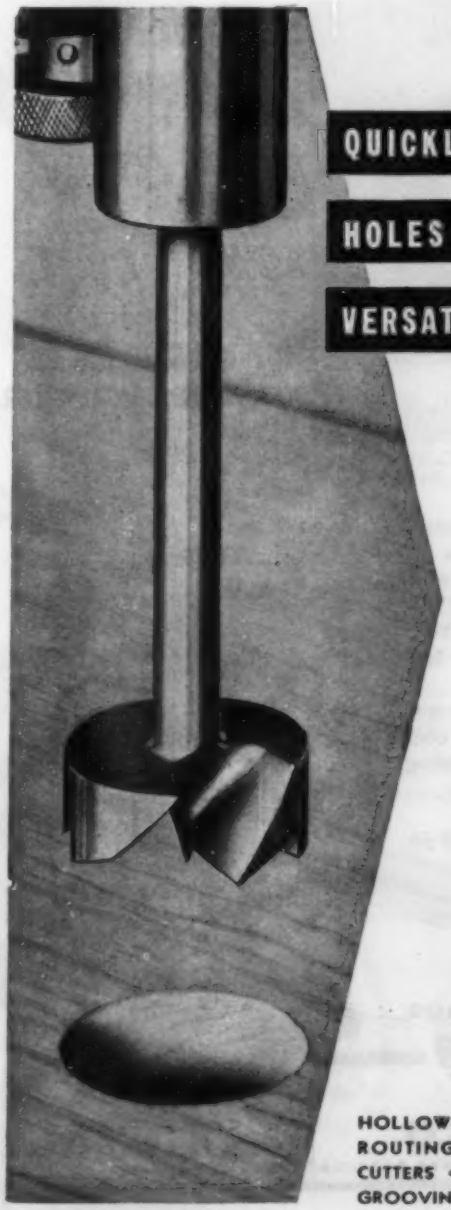
"(b) the cost of repetitive testing would be excessive;

"(c) the tests would require expensive or complicated testing apparatus not commonly available;

"d) the interest of the Government requires assurance, prior to award, that the product is satisfactory for its intended use;

"(e) the determination of acceptability would require performance data to supplement technical requirements contained in the specification." (*Armed Services Procurement Regulation*, Sup. of Documents, USGPO, Washington 25, D. C., 19 May 1948.)

Briefly, the procedure for a manufacturer to have his product placed on the Qualified Products List originates with the manufacturer. When his own tests and service records indicate that his product meets the requirements of a military specification, he files with the cognizant Bureau or Agency, named in the governing specification, a request that his product be included in the Qualified Products List.



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Foreign Woods

(Continued from page 32)

are red or brown, there seems to be little demand for a few more such woods. Those with quizzical minds sometimes wonder why woods which have fine properties and admittedly excellent or beautiful appearances are condemned in advance as unmarketable by the salesmen. Perhaps it would be profitable to let the ultimate consumer sit in judgment on some of these good-looking woods. Certainly some of the attractive "offcolor" species would be a goodly part of the solution to the problem of "something new" in furniture designs or treatment.

Fine-textured woods are very numerous in the tropics, but for some perverse reason only a small percentage are found in timber size or log-producing trees. When, as seems to be the case at present, the fine-textured wood must also be light-colored and rather low in density as well, the number of species available in quantity becomes very small. Fortunately, many of our finest woods, including mahogany, walnut, and oak, are in the coarser-textured class so that methods of handling and finishing are well known. There are a few very coarse-textured woods which are of sufficient abundance and size to warrant consideration for plywood. Among them are probably a few that will be difficult to veneer smoothly. Except where an attempt is being made to use a large percentage of the species from a given tract this will not be a serious problem as these woods are typically unattractive.

In some very rapid-growing tropical trees, tension wood is prevalent. This adverse feature causes warpage, buckling, grain-tearing, and fuzziness from sanding. It is the same defect that is becoming increasingly common among our second-growth hardwoods. Undoubtedly, this material has caused some of the unsatisfactory results obtained in trials of new woods. If recognized, tension wood can often be avoided in the standing tree or in the log, or graded out of the cut wood.

Among the most serious deterents to the continued introduction of some of these woods are defects acquired after felling of the tree, notably: splitting of the logs, stain, and insect damage. In most cases, all of these can be controlled through prompt and complete chemical treatment, rapid handling, and proper processing methods. Where logs are imported into the United States long after felling, the control methods must be better and more carefully applied. If the reduction in wood loss is calculated, it is not difficult to compensate for the cost of treatment of perishable logs. However, the accounts of experiences predominately indicate that inadequate treatment and poor results have resulted in early abandonment of such control methods. It must be admitted that certain species are extremely liable to splitting and with these, even the best of the newer end coatings are of little avail. In such cases conversion of the logs must take place near the origin of the trees if these species are to be used. Some highly perishable light colored woods should also be converted in the country of origin.

Chance selection of one or a few trees is a poor basis for investigating a new wood. We do not expect every tree in temperate regions to yield prime quality wood. Leaning trees, eccentric or deformed boles, swamp grown instead of upland, open-forest grown, and obviously second-growth trees often make up a significant part of trial shipments from the tropics. Frequently the timbers selected have a good local reputation, and the best readily accessible trees have been cut for local use.

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Air Cylinders • Operating Valves • Press & Shear Controls • Air Ejection Sets • Blow Guns • Air Line Couplers • Air Hose & Fittings • Hose Reels • Pressure Regulators & Oilers • Air Strainers • Hydraulic Gauges • Uniflare Tube Fittings

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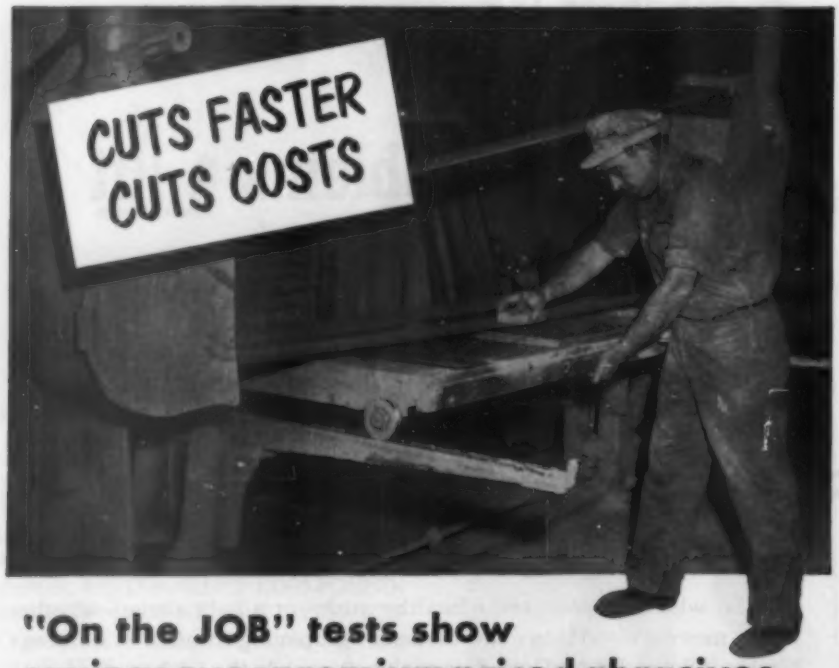
Utilization

(Continued from page 31)

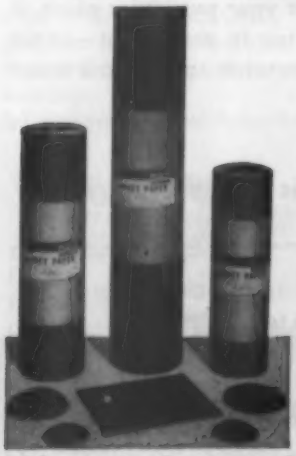
and a much more attractive pattern is developed.

In certain cases, however, it is undesirable to have the top face of the block at any angle other than parallel to the bottom; that is, the top of the pen base should be horizontal when placed on the desk for use. At the same time it is still necessary to expose several laminations in order to develop a contour pattern. This could be done by cutting a ¾-inch slice from a much thicker board in such a way that the laminations would run at an angle to the faces of the cut section.

This is expensive as well as impractical since heavy thicknesses must be made from a glued assembly and the glue lines will show in the finished item. It has recently been possible to produce molded "Stratawood" boards in which the plies are not parallel to the face of the board. Thus the flat surfaces of the board reveal many different plies which in turn makes a most interesting pattern even when flat and especially when cut to a simple contour. This is accomplished, of course, with a preform for molding.



"On the JOB" tests show savings over premium priced abrasives...



...with MID-WEST RESIN SEAL GARNET

Customers tell us that "on the job" tests have proven Mid-West Resin Seal Garnet to be superior to other coated abrasives costing much more. That is why we urge you to make a test run with Mid-West and compare it with the brand you are now using.

Designed specifically for the woodworking industry, Mid-West Resin Seal Garnet material is made with medium or heavy weight paper and all cloth backings, and flexibilities in belts, sheets, rolls or discs . . . or in any other standard form.

Why not let us show you how we can cut costs on your sanding operations? There is a Mid-West field representative ready to serve you. Write us for his name.

MID-WEST ABRASIVE CO.
EXECUTIVE OFFICES:
OWOSSO, MICH.

MID-WEST QUALITY ABRASIVES

Plants in Owosso, Michigan and Rochester, Pennsylvania

The wood veneers are fully densified and well bonded. The user can then develop items from a relatively thin, flat board which appear to have been cut from a much heavier piece at an angle.

Many demands are made for compreg tubing. Past practice has been to make such tubing from solid stock by turning the outside diameter and boring the inside diameter. This method not only wastes a very great percentage of the material but produces a tube which is mechanically unsound. If a cross-section of such tubing is examined, it will be found that on one diameter the laminations run tangentially while on the perpendicular diameter the laminations run radially. The tubing is strong when the laminations are tangential but very weak when they run radially.

In an effort to overcome this mechanical deficiency and conserve material, tubing has been made from sheet stock by gluing. Octagonal, hexagonal and square tubes have been made. All can be produced successfully but square tubing is best where maximum strength is required. Such tubing is not only superior mechanically and economically, but reveals most interesting contour lines when turned to variable radii. The decorative possibilities of such an assembly are almost endless. This type of tubing is now under test for use in cabinet bodies.

Cross-Banded Assembly for Die Stock

Tremendous interest has been shown in recent months in a material which would be suitable for use in metal forming dies, foundry patterns, sheet metal gauges, drill jigs, templates and other related fixtures. Such a material must be hard, dimensionally stable, strong, tough, and readily machinable, and low in cost. Compreg has all of these features. It is also important, especially in the aircraft industry, that such material be available in large sheets and heavy thicknesses. A cross-banded variety of compreg, called "Gaugewood", has recently been introduced which is available in sheets as large as three by eight feet in area and up to two inches in thickness. (See Fig. 2) Greater thickness can be obtained by gluing.

This product is made from a 1/16-inch rotary-cut, random-width veneer. Water-soluble phenolic resin is used as an impregnant. Special handling methods have been devised to assure freedom from voids at butt joints as the veneer is laid up for compressing and curing.

You can rely on

Crossett Quality Hardwoods

Furniture Semi-Dimension

Industrial Oak Specialty Cutting

Millwork Cut Stock

Yard, Factory and Industrial

Lumber

Red and White Oak

Red, Black and Sap Gum

Ash Cypress Elm

Other Southern Species

Well Manufactured *Well Dried*

CROSSETT LUMBER COMPANY CROSSETT ARKANSAS

Material Handling

(Continued from page 41)

breakage at knots, cross grain, etc., but those sticks that go through the first cycle successfully, will apparently last for many years.

Waste Disposal

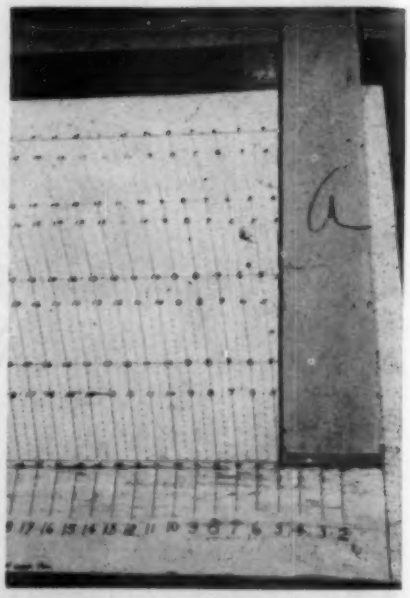
A serious problem at many concentration yards is in the disposal of trim ends and shavings. We convey these products to an elevated bin with a trap door in the bottom so that a truck can back under the bin and be loaded quickly. We find a ready sale for the trim ends and we give the shavings to the local chicken raisers who keep the shaving bin empty most of the time. When the shavings do pile up on us, we haul them to our 10-acre woodlot on the back of the property and spread them over the forest floor to decompose and improve the soil.

Relations With Small Mills

From the beginning of our operations, we have tried to influence the practices of the small sawmills supplying us with lumber. We buy all lumber on grade and pay a very high price for the upper grades and a fairly low price for the lower grades and the miscuts. We follow up by distributing thickness gages to the sawmill men, visiting their mills and advising them on cutting for grade, helping them to locate sawtimber, helping them to appraise sawtimber stands, advising them on cutting practices etc. All of these services are performed at no cost to the sawmill operator.

In almost two years, the result of this free service has produced a lot of good will and a certain amount of good intentions, but it has had very little effect, with one or two exceptions, on the practices of the sawmill operators. I have shown certain operators where they were losing $10.00 to $20.00 on every truck load of lumber they were hauling in, just by poor sawmill operation. They will agree, but they cannot seem to change. The imbedded fallacy of maximum production caused by many years of selling on a log run basis only, keeps them from producing on a quality basis. It may be, as some have observed, that if they were capable of quality production, they would not be in the small sawmill business.

In summary, I would like to point out that the small lumber yard can and must make modern labor saving improvements to stay in business. A little ingenuity can result in handling more lumber with less men and less effort and result in a more saleable quality product.



LUMBER SCALE board (pat. applied for) shows that five board feet—no need for unwieldy scale stick.

a UNION machine . . .
TO MEET ANY WOOD GLUING NEED

Union Serves Over 2,000 Satisfied Customers

UNION
Automatic Roller Coater

Unexcelled for accurate, economical operation in spreading all types of coatings.

Standard models take sheet widths from 12" to 108"; thickness variance from 0" to 2". Available with hollow rolls to permit circulation of cold water through them. Prolongs pot life of resinous adhesives. A temperature reduction of 15° will double your pot life.

NOTE: Any Union spreader may be equipped with rubber-covered doctor roll, if desired, at no additional cost.

Union makes equipment for every standard production job in wood gluing. Designs and makes machines for special applications, including machines for electronic gluing.

Write for data on the complete Union line. Name of agent in your territory sent on request.

●

Write for your free copy, "The How's and Why's of Wood Gluing," by Thomas D. Perry.

UNION TOOL CORP.
312 East Market Street
Warsaw, Indiana, U.S.A.

USERS SAY UNION CUTS COSTS — SPEEDS PRODUCTION

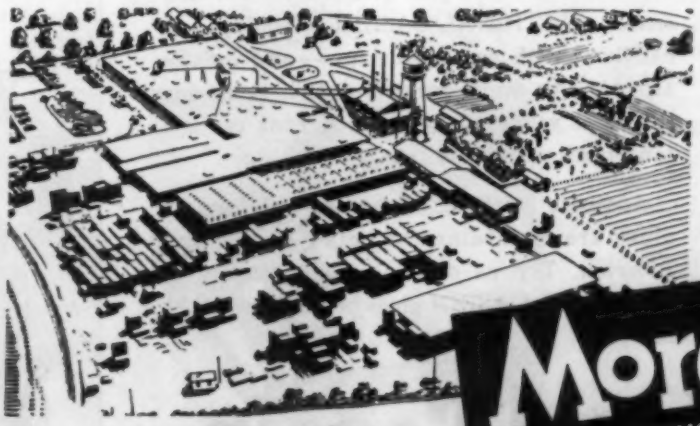
Buy Dimension . . .

FURNITURE FREIGHT RATES WILL GET YOU IF YOU DON'T WATCH OUT!

IT just doesn't pay to ship finished furniture long distances any more . . . too much air, packing is expensive and the rates are prohibitive insofar as the ultimate consumer is concerned.

There's a way around, of course — the Morgan way! We'll send you dimension stock carefully packed for cars or trucks (expense doesn't even compare), you assemble, finish and have a nice price advantage over competition, if they ship finished furniture long distances.

Believe it? Try it! Write for our new book . . . now.



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BLACK MOUNTAIN, N. C.

Morgan Manufacturing Company, Inc.

Marketing

(Continued from page 23)

If this principle of advertising were generally followed in all the space now occupied with conventional copy, a tremendous selling force would be created which, if followed through by trained salesmen, would create vastly larger demands and start the curve of per capita consumption upward to reverse the trend of the last quarter century. But all this will require thought and effort. It is not easy, but will have to be done by each individual advertiser, as well as he can. It is easier to generate and apply this power than to suffer the consequences of default. "Every knack improves by practice" and he might be surprised at his own efficiency if he and his staff will put their heads to work. The trade papers cannot be expected to write the copy although they may offer helpful suggestions. When they furnish space, circulation and proved readership, they have done their job. Out of your own head you must generate the power to move your lumber from where it is made to where it is used. For several years, when lumber sold itself, there was no need to generate that power but far-sighted lumbermen can now see ahead to the time when that lumber will remain on the yard unless this selling power is generated and skillfully applied.

Try New Ideas

It is not too soon to get away from the outmoded ideas and methods and develop new and effective techniques. A good place to start is in the advertising field but it cannot stop there otherwise there will be no fuel for the sparkplugs to activate.

This is a very inadequate approach to this vitally important subject. It is intended only to be suggestive and conclusive. It is something to think about. Not everyone will agree but a recognition of the need for progress may result in avoiding, in larger measure, the evils which came with the last depression and which are still remembered as nightmares; overproduction (or correctly termed under-consumption), throat-cutting competition, capital losses, unemployment, headaches and agony. It is time now to clear the road ahead with the power of trained salesmanship and convincing advertising.

National has the right glues for your job . . .

★ Exterior and interior plywoods.
★ Machine edge gluing and hand work.
★ Decorative plastics.
★ Chip board manufacture.
★ Laminating hardboards, veneer splicing, laminated rafters.
★ Glues to pass all government specifications.

Contact office nearest you, no obligation.

No matter how BIG your glue order . . . or how *small* — NATIONAL CASEIN is equipped to handle it with speed, economy — and *infinite* attention to every formula detail. Same-day service is yours on most orders. Tank car and tank truck shipments take a little longer.

Adequate stocks of all but special formula glues are maintained at both Chicago and Riverton. Try us once . . . you'll stick with NATIONAL CASEIN glues because they *stick* for you.

National Casein

603-19 West 80th Street, Chicago 20, Illinois. Broad & Fulton Sts., Riverton, N. J.

A Wood Trading Post AD will find Men—Materials—Machinery

WOODICTIONARY

BACKING BOARD

The last board in log to which carriage dogs are attached.

Part-Time Forest Products Education

. . . that is what the Forest Products Research Society Means to Thousands of Self-Made or College-Trained Men who Earn their Livelihoods from Wood. School's In again as the Society Enters the Most Active Fall-Winter Term in its History.

Founded in 1947, and today proudly numbering over 2400 active members, the Forest Products Research Society is entering its 6th and most heavily scheduled Fall season. In the next two months wood industries men will have their choice of eleven FPRS Section meetings, scattered from Vancouver, B. C. to the Statler in New York City, where they can hear as well as participate in discussion of subjects with which they are either directly or indirectly concerned. From "Wood in Housing" to "Wood in Marine Usage," from "Wood in Packaging" to "Waste as Core Stock," and a multitude of wood subjects in between, the entire industry absorbs an education at FPRS meetings.

What is the magnet that is bringing together, and holding under one program, management, production and technical people in every walk of forest utilization and supplying industries? In its simplest term it is expressed by one word—Progress.

There can be little doubt that FPRS, the only source of technical information for many branches of the forest products industries, and the only society to cut-across all branches of wood, from forestry to finishes, has been a symbol of great progress in the industry. Six-hundred leaders who gathered at Milwaukee last June to set new goals for wood products proved it. The hundreds of technical and academic articles issued in the Society publications since its origin prove it.

The FPRS embodies long-range planning for a strong forest products industry. It brings together, and makes work, research and production. Management, with impetus from promulgated research, is putting ideas into production that are effecting a more total utilization of wood than ever before.

The Society has always stressed that its meetings are open for the benefit of all to attend. Membership is not a requisite; you are cordially invited to come, see and hear for yourself. At any future time you are welcome to investigate the growing publication and other benefits of membership obtainable at the nominal figure of $15 per year.

Complete information regarding any of the forthcoming meetings described in adjoining columns may be had by writing the Executive Secretary, Frank J. Rovsek, Forest Products Research Society, Box 2010, University Station, Madison, 5, Wisconsin.

Section News

Early October meetings of FPRS have included the initial meeting of the Ohio Valley Section at the U of Louisville, October 2. Sessions were held on "New developments in Woodworking tools and equipment," and "Trends in corestock manufacture."

The Inland Empire Section met Oct. 2 and 3 in cooperation with the Northwest Wood Products Clinic at Washington State College, Pullman, Washington.

General Education in Store At Clinton, Iowa, Oct. 9, 10

This is the last call for what may turn out to be one of the two or three best-attended and conducted FPRS meetings of the year, under the able direction of retiring Chairman, George Stanley, and his outstanding Midwest officers and committee heads. This big meeting starts on the evening of the 8th at the Hotel LaFayette, continuing there until the plant tour of the Curtis Co. operations on the last day. Program Chairman Ralph Casselman, Paine Lumber Co., Oshkosh, has stressed the quality and currentness of information on such subjects as Gluing, Prefabs, Costs, Veneer Machinery, Lumber Grades, Kiln Schedules, Wood Aggregate Molding, Millwork, and Materials Handling.

Curtis Companies, manufacturers of sash, doors and millwork since 1866, have cordially invited all present to visit their operations.

Chip Core Wood Boards, Topic At Raleigh, N. C., Nov. 7

The new building of the N.C. State College, School of Forestry at Raleigh will be the scene of the Annual Meeting of the Carolinas-Chesapeake Section of the FPRS. Technical sessions will include papers by, Mr. E. Demmon, Director of the Southeast Forest & Experiment Station, who will open the program with a general discussion of availability of waste materials in the South.

Foreign developments will be discussed, in turn, by John Colucci, John Sides, and James Bethel, each of whom has observed overseas wood production in recent months. Armin Elmendorf, of Elmendorf Research, Chicago, will enlarge on his knowledge of latest chip core developments. Also on the program will be Dr. E. G. Locke, U.S. Forest Products Laboratory authority and past-National President of the Society. The program is being developed by George Englerth, Walton Smith, and Kenneth Redman.

The evening will be devoted to a banquet at the Carolina Hotel in Raleigh. Ladies cordially invited. As an added attraction, Secretary Harrar, has reserved a block of 100 tickets

FPRS MEMBERSHIP BENEFITS include valued Annual Reference Proceedings, new Quarterly Journal, many others.

for the Duke-Navy game at Durham, Nov. 8. Reservations may be placed through Dr. E. Harrar, PO Box FM Duke Sta., Durham.

Wooden Boxes, Crates and Pallets—Materials and Methods —On Great Lakes Program At Ann Arbor, Mich., Oct. 31

Moving afield from furniture technology and their home base of Grand Rapids, the Great Lakes Section will hold a one-day stand at Ann Arbor, home of U of Michigan and its famed school of Natural Resources. Program Chairman Steve Pryce, John Widdicomb Co., Grand Rapids, says the program is designed to appeal to users and manufacturers in the Greater Detroit area, the focal point of commercial and military package utilization in the U.S.

FPRS Meeting At Radium Springs, Georgia, Oct. 17, 18

The Florida-Georgia-Alabama Section holds its Annual Meeting on the above dates. Program Chairman is Milton Ryberg, U.S. Forest Service. Last year an outstanding meeting was held at Valdosta, Georgia, with over 75 wood industries leaders in attendance.

Northern California Section To Meet October 31.

This active Section, which has been holding frequent meetings, will resume Fall activities at Sacramento, California on the above date.

Deep South To Meet At Baton Rouge, November 7, 8

Louisiana State University, School of Forestry, will be the scene of the Annual Meeting of the Section. Society president Kenneth Chesley and several Board Members will be present. Deep South is also the host Section to the National Annual Meeting of FPRS to be held at Memphis, Tenn., next June 15-17.

"Wood In The Home", Theme Of New York Meeting Dec. 4, 5.

The hotel Statler will be the home of the energetic FPRS Northeast Section in cooperation with the A.S.M.E. Woodworking Division, in New York City, December 4 and 5.

The program starts at 9:00 A.M. on Thursday and concludes at 5:00 P.M. Friday.

On Thursday A.M. four papers covering "Preparation of Surfaces" will be presented. They will take up, Control of Sunken Glue Joints, Cutting Knife Problems, Contour Sanding, and Surface Sanding. The principal address, "Trends in House Construction," will be presented at the official luncheon.

The afternoon will be given over to a forum on "What's New in Surface Finishing?"

Following a brief business meeting Friday A.M., Session III, "Home Construction," will include papers on Trends in Structural Practices, New Aspects of Stock Millwork, Use of Cut-Stock in Building Practice, Getting the Most out of Flooring, and Pre-finished Wall Panels.

Friday afternoon will be devoted entirely to the series of interesting Discussion Sessions on Handling, Seasoning, Sawmilling, and Finishing, which the Northeast Section has inaugurated.

160-Page September "Journal Of FPRS" Off Press

The third quarterly issue of the new JOURNAL of the FPRS has been mailed to voting, associate and supporting members. It carries a total of twenty-nine articles covering such fields as wood finishing, materials handling, utilization, hardboard manufacture, adhesives, and general, plus

FAMOWOOD . . . the AMAZING

ALL-PURPOSE PLASTIC for wood finishes!

Applies like putty . . . Sticks like glue!

FAMOWOOD is the answer . . . where wood finishes are important. Simple to use . . . efficient, lasting, time-saving, when filling wood cracks, gouges, nail and screw holes or correcting defects. Dries quickly, does not shrink. *Stays put* under adverse conditions.

FAMOWOOD sands easily, does not gum up sander. *Takes spirit dye stains freely.* Waterproof and weatherproof when properly applied. Ready to use—"*right out of the can.*" Fifteen matching wood colors with matchless wood finishes.

USED BY . . . FURNITURE MFGS. • SASH AND DOOR MFGS. • CABINET MAKERS • CONTRACTORS • BOAT BUILDERS PAINTERS • AIRCRAFT PLANTS • PATTERN SHOPS • HOME BUILDERS • ALL WOOD PRODUCTS

FAMOWOOD descriptive literature and price list on request.

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ASSURE HIGH SPEED PRODUCTION

BIG CHIEF

The most dependable knife for general purpose high production work.

KNIFE SPECIALISTS SINCE 1891

MOHAWK

Can withstand hard knots in Southern and similar soft woods.

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UNIFORM COLOR

Customers Expect More From STEM and They Get It

A condition you desire . . . a need we can fill. All walnut veneer produced at the Stem mill is carefully selected and graded for color values. So, when next you are looking for veneers of uniform color, look to Stem.

CHESTER B. STEM, INC.
818 Grant Line Rd., New Albany, Ind.

These higher grades of
VENEER and LUMBER
manufactured and available at all times

American Walnut . . . Avodire . . . Hard Maple . . . White Ash . . . Yellow Poplar . . . Cherry . . . Indiana Soft Textured White and Red Oak . . . Butternut . . . Prima Vera . . . Honduras and African Mahogany . . . Knotty Pine . . . Sapeli . . . Special logs for special places . . . lumber from modern dry kilns.

an expanded abstract service. Copies obtainable through membership, or individual sales. Write FPRS national office.

Big Forestry, Logging and Sawmilling Equipment Demonstration at Carpenter, Ohio, Oct. 15, 16

Over 40 manufacturers of woods equipment will demonstrate at the Southeastern Substation Farm of the Ohio Agricultural Experiment Station, Carpenter, Ohio, October 15 and 16. Equipment includes: tractors and accessories, power and chain saws, sawmills, moisture meters, fire pumps, air tongs, loaders, tree planter, brush hog, kilns, chippers, peelers, plus various conservation exhibits.

General plan of the show will follow the normal steps in a logging operation. The central area of the site will be kept free of exhibits and used as a center demonstration ring. Here, each distinctive piece or combination of equipment will be demonstrated in operation and its merits pointed out over the public address system. Chairman of the big event is FPRS member Ralph K. Day, U.S. Forest Service, Central States Forest Experiment Station, Columbus, Ohio.

FPRS Northeast Section Issues $1,000,000 Checks

Checks redeemable for one-million dollars worth of forest products research, development, seasoning, machining, finishing, packaging, distribution and utilization information, reference materials and other benefits possible with membership in FPRS are now being distributed in the Northeast, in a forceful drive to get new members.

Creator of the "long range security program," is well-known writer, Paul H. Graham, Woodworking Consultant, and FPRS Northeast Publicity and Membership Chairman. For your million dollar check, write, P. Graham, Box 145, Manchester, N.H.

Technical Publications

The following publications are reported as being currently available without charge, from the U. S. Forest Products Laboratory, Madison 5, Wis.

No. R1925 – *Thin, Face Nailed Hardwood Strip Flooring*, by W. G. Youngquist. June 1952. The thin, face-nailed, hardwood strip flooring that is widely used in the San Francisco area is described in detail. Satisfactory service behavior for a year has been given by a similar floor in an office at the Forest Products Laboratory.

No. R1922–*Air Seasoning of Lodgepole Pine Poles*, by J. S. Mathewson. June 1952. Data are presented to show the reliability of a resistance type of electric moisture meter in determining the transverse moisture content average and distribution in class 7, 30-foot lodgepole pine poles and the effect of two methods of piling on drying rate and occurence of fungous stains.

No. R1918–*Paper-honeycomb Cores for Structural Sandwich Panels*, by R. J. Seidl. March 1952. Compressive and shearing strength of paper-honeycomb cores increased with increase in resin content. Shearing strength was affected only slightly by type of resin.

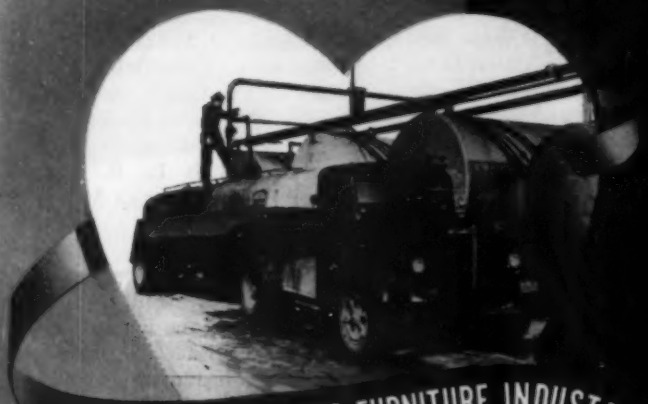
No. R1910 – *Strength of Wood Beams of Rectangular Cross-section as Affected by Spandepth Ratio*, by S. C. Bechtel and C. B. Norris. March 1952. A theoretical equation for predicting failures of wood beams is presented and confirmed by tests that show that the stress-distribution curve for a beam is similar to the compression stress - strain curve and that the strength can be predicted reasonably well if the resultant shear distribution is properly considered.

YA
YATES-AMERICAN GROOVING DISCS are used where diameter must be maintained and the width of the groove must be accurate. Knives are adjustable sideways to cut the required width groove.
The knives have corrugated backs and are easily replaceable. The gibs cannot fall out of the head and yet are easily removed when necessary.
MATCHERS • BAND RESAWS • SURFACERS
SANDERS • CIRCULAR RIPSAWS
YA Yates-American
BELOIT, WISCONSIN

Catalin

DEPENDABLE PRODUCERS OF QUALITY

RESIN GLUES



IN THE HEART OF THE FURNITURE INDUSTRY

SOUTH EAST WEST NORTH

FORDS, NEW JERSEY — EAST

CALUMET CITY, ILLINOIS — MID-WEST

THOMASVILLE, NO. CAROLINA — SOUTH

RANGE: Catalin offers a complete range of Urea, Phenolic and Resorcinol resin glues for all types of hot and cold press operations.

QUALITY: Catalin resin formulations have been developed to produce economical, durable bonds that comply with commercial requirements as well as with government specifications for interior, exterior and marine grade applications.

Quality Control Laboratories, working closely with the Catalin staffs, rigidly test the purity of all chemical ingredients before, during and after resin processing . . . thus maintaining finest standards for Quality and Uniformity.

SERVICE: Three modern, large capacity Catalin processing plants . . . strategically located in the heart of furniture, plywood and woodworking areas . . . are conducive to eminently satisfactory glue service. Deliveries are so prompt that Catalin customers do not need to carry large, on-hand inventories of resin glues.

TECHNICAL ASSISTANCE: The basic resins as developed and produced by Catalin, satisfy most wood glueing applications—with little or no modification. Where working conditions and product specifications demand special adhesive qualities, Catalin technicians will welcome the opportunity to compound special formulas and assist in determining production procedures for improved quality and efficiency. Inquiries invited!

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ONE PARK AVENUE • NEW YORK 16, N. Y.

NAMES and EVENTS

Personnel Changes

JACK CUTSFORTH has been named for the newly created post of sales promotion representative for the Valley Plywood Co. and the Western Veneer Co., Eugene, Ore.

PETER KOCH who formerly was assistant to the president of the Stetson-Ross Machine Co., Seattle, Wash., has opened a consulting engineering office in the Arctic Building in downtown Seattle.

W. E. Difford

W. E. DIFFORD of Seattle, Wash. has been named managing director of the Douglas Fir Plywood Association, effective September 1, 1952. This is the second time that Mr. Difford has been called upon to direct trade promotion for the northwest forest products industry which today is comprised of 85 factories employing 20,000 workers.

R. M. Laird

R. M. LAIRD was recently elected to succeed his mother, Mrs. Helen C. Laird, as director and secretary of The Connor Lumber and Land Co., Wausau, Wis. In addition to the duties of director, second vice-president and secretary of the company, Mr. Laird was elected as assistant manager of the Michigan operations.

ROYCE O. CORNELIUS has been named assistant manager of the forestry department of the Weyerhaeuser Timber Co., Tacoma, Washington. He comes to Tacoma from the firm's Coos Bay branch at North Bend, Ore. where he has been branch forester since 1946.

JOHN B. VEACH, president of the National Lumber Manufacturers Association, Washington, D. C., has been appointed chairman of the newly revamped Lumber Survey Committee.

C. S. ALEXANDER, controller of the T. R. Miller Co., Brewton, Ala., has been elected president of the Birmingham Control of the Controllers Institute, New York, N. Y. RUSSELL E. EARLY, comptroller and assistant treasurer, St. Paul & Tacoma Lumber Co., Tacoma, has been similarly honored by the organization's Seattle Control, which also elected DWIGHT ORR, comptroller, Weyerhaeuser Timber Co., Tacoma, to its board of directors. At the annual meeting of the organization's Richmond Control, STEPHEN A. LIPSCOMB, JR., controller of the Camp Mfg. Co., Inc., Franklin, Va., was chosen vice-president. The new treasurer of the Chicago Control is L. B. BUCHANAN, vice-president, Chicago Mill & Lumber Co.

AUGUSTINE R. MARUSI has been appointed vice-president in charge of development of the Borden Company's Chemical Division. He comes to the New York headquarters office from Sao Paulo, Brazil, where he had been director-superintendent of Alba, S. A., a subsidiary of the division.

JAMES J. DUNNE, vice-president of United States Plywood Corp., New York, N. Y., has been named a mem-

You Can Always Depend on

Permawood

Since 1918 the management and supervisory personnel have set high standards for PERMAWOOD. By patient employee training, careful timber selection and use of the finest machinery, we have made a product we are proud to label as PERMAWOOD Hardwood Plywood.

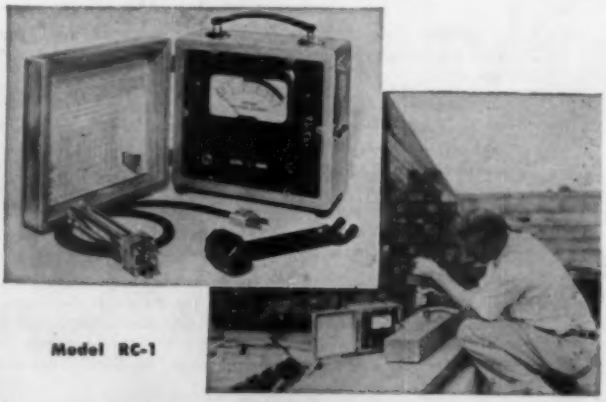
High-frequency Edge-Gluer used in producing finer lumber core for PERMAWOOD Hardwood Plywood.

We make PERMAWOOD panels in standard sizes, all veneer construction from 3/20" to 1-1/16" thick, and in lumber core construction in 3/4" and 13/16" thickness. Widths from 30" to 48"; lengths from 36" to 96". Write for latest stock lists and prices.

DARLINGTON VENEER CO., INC.

Established in 1918

DARLINGTON, SOUTH CAROLINA



Model RC-1

Delmhorst Moisture Detector has "paid for itself time and again"

Says Mr. Herbert Seidel
Reisen Hardwood Lumber Co., Union, N.J.

". . . We use it constantly to check the moisture content of incoming lumber, to select air dry stock from the yard stocks and to check outgoing lumber," writes Mr. Seidel.

"In the kiln operation, the Moisture Detector has proved to be a necessity (especially when used with the 26E electrode) for making quick checks on lumber entering the kilns . . . saves the kiln operator hours in starting a new charge in the kiln . . .

". . . We know that it has paid for itself time and again in every operation of our business that requires knowledge of lumber moisture content."

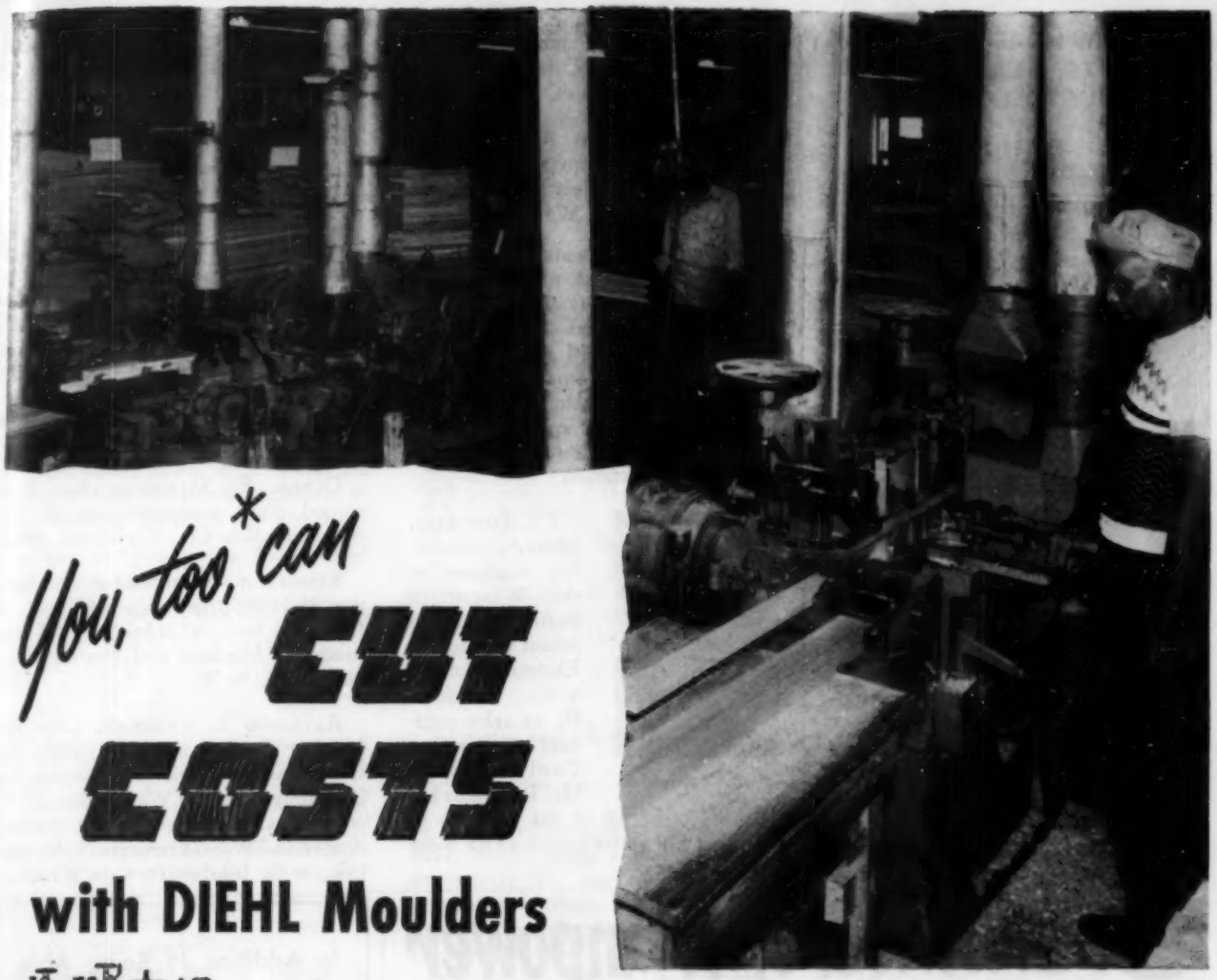
Some Moisture Detector Advantages

- **Quickly and accurately measures moisture content of any wood product from 6-65% (veneers, lumber, timbers, etc).**
- **Direct reading in percentages on large 4½ inch dial. No calculations required.**
- **Ideal for dry kiln testing—wet cores can be tested without cutting lumber.**

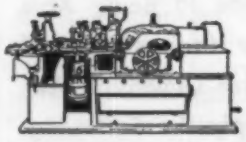
Guaranteed for one year. Write for full information.

DELMHORST INSTRUMENT COMPANY

605 CEDAR STREET • BOONTON, NEW JERSEY



You, too,* can CUT COSTS with DIEHL Moulders



For over 40 years, Diehl-Vonnegut Moulders have set the standard for the industry—providing long, trouble-free performance at highest production speeds. Many of the early machines are still in service, doing precision work, and the maintenance cost for their entire period of operation has been negligible.

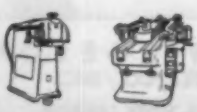
Diehl can cut costs for you, too. When you standardize on world-famous Diehl-Vonnegut Moulders as well as other Diehl woodworking machinery . . . you profit by engineered design simplicity, ease of set-up, ease of operation, and *dependable Diehl service.*

***For Example:** This pair of Diehl-Vonnegut Moulders cut costs—maintain fast and accurate production—for the S. R. Hungerford Company, Inc., Memphis, Tenn., one of the world's largest manufacturers of solid mahogany furniture. Hungerford also utilizes the efficiency of 3 Diehl Straight Line Glue Joint Rip Saws and a Diehl Straight Line Cut-Off Saw in their modern plant.

The complete range of Diehl-Vonnegut Moulders includes standard 4-head models in 4″, 6″, 8″ and 12″ sizes. Special 5-head models, adaptable as planer-moulders or moulder-matchers, are available in 8″ and 12″ sizes.

Call your Diehl representative when you face the problem of improving production and cutting costs. Or write today for descriptive literature.

Where Precision Craftsmanship is Honored

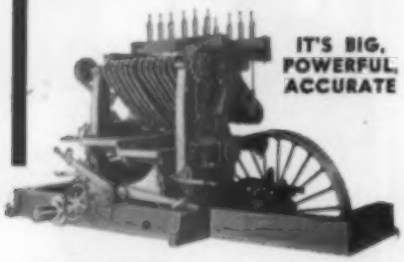


On the Banks of the Wabash

THE G. M. Diehl MACHINE WORKS, INC.

WABASH, INDIANA • U.S.A.

RESAW MORE SPLIT LOGS, CANTS, SLABS, ACCURATELY TO 1/32"



IT'S BIG, POWERFUL, ACCURATE

WITH THE

McDONOUGH 62"
HORIZONTAL
BAND RESAW

Resawing on the McDONOUGH Horizontal Band Resaw supplies you with an extra 1" board out of every 12 x 12 cant. Special type feed chains, driven fluted rollers, providing positive feed plus accurate adjustment of width of cut, equal an increase in your sawed lumber production. Increase YOUR lumber output. . . Write for descriptive bulletin H 62-1.

McDONOUGH MFG. CO.
1504 GALLOWAY, EAU CLAIRE, WISCONSIN
World's Largest Producer of Vertical Band Resaws

ber of the advisory committee of the Building Officials Conference of America, Inc., Detroit, Mich.

GRAHAM ROHRER has been appointed director of specialty sales and advertising of the Georgia-Pacific Plywood Co., Olympia, Wash.

JOHN HOLMAN is named department manager of the book match advertising department of The Diamond Match Co., New York, N. Y. GEORGE DUFFEY was selected to be assistant manager of the company's Oshkosh, Wisconsin match factory, and JAMES N. RAMSEY has been appointed superintendent and assistant manager of the Oshkosh operation.

J. S. Tompkins

J. S. TOMPKINS, formerly consulting engineer of the Wisconsin Knife Works, has joined the staff of Ekstrom Carlson & Co., Rockford, Ill. as sales engineer in the Cutting Tool Division. Mr. Tompkins has been devoting all of his energies to the solving of cutter problems for more than 35 years.

R. H. Morris

R. H. MORRIS, formerly publisher of American Builder Magazine, has been appointed general manager of Ponderosa Pine Woodwork, Chicago, Illinois. Morris, who has spent over 23 years in building industry publication work, is well known for the campaign he led which resulted in the enactment of the National Housing Act of 1934.

GLENN E. MAXFIELD has been named plant superintendent of The American Box Co., Cleveland, Ohio.

SAMUEL S. AUCHINCLOSS has been named executive vice-president of DeWalt, Inc., a subsidiary of the American Machine and Foundry Co., New York, N. Y.

RAYMOND L. OSBORNE, who has been a lumber specialist with the United States Tariff Commission, has been appointed the Washington, D. C. representative of the Service Bureau, American Wood-Preservers' Association, with headquarters in Chicago,

SPEAKING of Manpower

When you cannot get the manpower you need, you can get more production out of what you have—by using CLARK EQUIPMENT for handling materials.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS
AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

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and
WEST COAST PRODUCTS

JOE VIRGESON
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COLUMBIA, SOUTH CAROLINA
P. O. Box 744, Phones 5165-5166

(Continued from page 37)

variations.

Many like to compare kiln performance. For this reason Table 2 is included giving our average drying times for given species, thicknesses and initial moisture contents. This table was compiled from data collected on charges run during the period July 1949 to January 1951.

Conditioning lumber to as near a stress-free condition as practical is an important operation for us, particularly for heavy stock. Experience has shown us that conditioning periods of the following duration are required:

DURATION OF CONDITIONING TREATMENT[1]

Cherry, maple, beech, birch		Yellow poplar & basswood, etc.	
Stock size	Time—hours	Stock size	Time—hours
4/4	10 to 15	4/4	5
5/4	15 to 20	5/4	9
6/4	20 to 25	6/4	15
8/4	40 to 45	8/4	24
10/4	45 to 50		
12/4	50 to 60		

[1]Conditioning treatments are from time controls that were set until shut-off. The average time required to change temperatures from 180° F. dry-bulb and 150° F. wet-bulb to 180° F. dry-bulb and 165° F. wet-bulb was approximately 1½ hours.

Our drying standards used in conditioning and which also govern the drying periods given in the other tables, are specified at 6 to 8 percent final moisture content.

Post-kiln treatment of lumber is typical. Lumber is allowed to cool for at least 1 day before processing. Controversy exists within our plant, as well as in others, on the virtues of a storage conditioning period of at least a week or better before manufacture. My personal opinion is that our schedules plus our thorough conditioning treatment at high temperatures minimize our moisture gradient within the lumber. Essential moisture content differences existing at the time of kiln discharge are quite well equalized during the cooling process, a process that is believed to be more beneficial than generally recognized. Hot lumber exposed to vapor pressure differences that exist at room temperatures attains some degree of moisture content equalization.

Plant Humidification Control

Lumber dried and conditioned to a moisture content of from 6 to 8 percent requires maintenance of the same equilibrium moisture content conditions in the plant to prevent serious stock checking and shrinkage.

Summer problems are not too serious and can be controlled by the use of uncomfortably high temperature or dehumidifying equipment. However, winter poses a real problem of excessively low equilibrium moisture content conditions, a problem which can be treated, at least in part, by plant humidification.

Proper humidification is desirable in all departments of a furniture plant, but is particularly important in the rough mill, finish-machine room and cabinet room where the material is machined, glued and assembled. This has been the objective at our plant. Although we haven't been 100 percent successful in obtaining perfect moisture control, we have made great strides forward.

Combined in one large one-story building, we have kilns, dry lumber storage, veneer storage, veneer processing and the rough mill. By virtue of its unity of location, materials in storage and in process are exposed to very much the same conditions. Under this arrangement conditions are held to amazingly close and acceptable moisture limits by the presence of the kilns and their unavoidable leakage.

This has been our answer to the ever-difficult problem of humidifying a large area with a very rapid air turnover due to multiple waste exhausts. During the shut-down hours the ceiling space heaters are set for 60° F. and this helps provide for the desired conditions for the rough dry lumber and for material in process.

To check these conditions, stations throughout this area have been designated at which periodic temperature and humidity conditions are taken and recorded. The indicated range has been found to be between 6.3 to 8.6 percent equilibrium moisture content.

To prevent spot drying, all unit heaters have their louvers adjusted horizontally. Each unit is located opposite cold draft and each is part of an air circulation pattern.

Humidification for our finish mill, sanding department, and cabinet room is handled in a more orthodox manner by the use of fan-backed, filament controlled cold water atomizers.

Although the humidification is automatically controlled, we have arranged our units so that the fans work full time. This, we believe, provides for the air circulation so important to temperature uniformity. Controlled humidity in the finishing department is desirable, but we, as yet, have not felt the urgent necessity for installing the equipment. This, however, does not include the finish drying ovens in which air is heated from 100° to 130° F. and some humidification is necessary. This we accomplish by the use of a cold-water atomizer just ahead of the blower fan in the duct system. Admittedly this system doesn't bring oven conditions up to the 6 to 8 percent moisture content range, but it does do the job, for drying checks are not found and moreover condensation problems are not encountered.

TABLE 2.—AVERAGE NUMBER OF DAYS DRYING TIME
From July 1949 to January 1951[1]

Thickness	Under 30 percent	30 to 40 percent	40 to 60 percent	Over 60 percent
		Cherry		
4/4	6	11	13	15
5/4	6	12	18	21
6/4	7	15	24	30
8/4	15	26	30	39
10/4	..	35	38	..
12/4	29	49	50	56
		Mahogany		
4/4	6	..	..	..
5/4	..	..	..	..
6/4	10	..	23	..
8/4	10	15	29	..
10/4	10	..	..	..
12/4	..	..	35	..
		Poplar		
4/4	4	7	..	..
5/4	3	6	8	10
6/4	10	..	..	..
8/4	12	..	..	..
		Soft Maple		
4/4	5	..	..	..
5/4	9	..	18	..
6/4	10	16	..	..
8/4	..	..	..	..
10/4	26	..	..	..
		Oak		
3/4	4	10	15	22

[1] Dried in end-piled, 4-bunk, converted standard kilns at John Widdcomb Company.

No Waste
No Worry
No Regrets

WHEN YOU BUY

MANSFIELD
Micro-Made
DIMENSION

Hardwood
or Pine

You are assured Supply and Select Material because of Mansfield's own vast perpetual timber lands and two big band mills. Superb Workmanship and On-Time Delivery is assured by experienced craftsmen using the very latest methods and machines. Make MANSFIELD your permanent source of supply for dimension.

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Shreveport, Louisiana

Mills: Zwolle and Mansfield, Louisiana
Dimension Plant: Zwolle, Louisiana

Ill., and branch offices in New York City, Portland, Ore., Sacremento, Cal., and Lawrence, Kas.

HOWARD C. GERMAIN has been appointed director of purchases for the United States Plywood Corp., New York, N. Y.

QUINCY T. HARDTNER, president of the Urania Lumber Co., Urania, La., has been appointed vice-chairman of the Louisiana Forestry Commission.

EARL D. SANDVIG, assistant regional forester in charge of wildlife and range management for the Pacific Northwest region of the Forest Service, has been given a range assignment to Chile with a forestry mission. His previous post will be taken by AVON DENHAM, who comes to the Portland, Oregon office from the Washington, D. C. office of the Forest Service.

DR. HARDY L. SHIRLEY of Syracuse has been appointed dean of the State University of New York's College of Forestry at Syracuse, which will begin its 42nd academic year this month.

JOHN M. JERNIGAN is now the technical service director of the Southern Div. of Reichhold Chemicals, with headquarters in Tuscaloosa, Ala.

EINER HOLMBERG, President of CLINTIN MILLS, INC. and the VIKING LUMBER CO., purchased the NORTH DOUGLAS MILLS, Sutherlin, Ore. EDWIN HOLMBERG is to manage the planing mill, MAURICE STRATTON is named Superintendent, and JASPER HERROD is log buyer.

Expansions

ACME CHAIR CO., Walnut, Miss., is building a new $100,000 plant in that city. The company, which operated a factory at Reading, Mich., for many years, expects to begin the manufacture of folding chairs in the near future.

GEORGIA-PACIFIC PLYWOOD CO., which operates plants in the Pacific Northwest and in the South, has opened a warehouse in Cleveland, Ohio, at 4832 Ridge Road, and another in New Orleans at 601 South Olympia St.

CROSSETT LUMBER CO., Crossett, Ark., has announced that it will build a $300,000 hardwood flooring plant to replace the one destroyed by fire in 1948. The new building will be equipped with a water sprinkling system for fire protection.

(Continued on page 84)

WRITE TODAY

for your copy of our new

Sawmill Bulletin 201.

ESTABLISHED 1878

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★ Across the nation, Mid-States is recognized as *headquarters* for container wire. Mid-States designed and manufactured the first industrial container wire ever produced . . . set the pace as the industry grew . . . and is still first with the answers as problems arise in the handling and shipping of merchandise.

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CRAWFORDSVILLE, INDIANA
JACKSONVILLE, FLORIDA

Illustration shows Standard Installation at the John I. Shafer Hardwood Company, Logansport, Indiana. *This Company puts its stamp of approval on Standard kilns with 2 repeat orders.*

BETTER BUSINESS BELONGS IN *Your* PICTURE, TOO!

INSTALL
STANDARD DRY KILNS

• Through the years Standard dry kilns have become synonymous with perfection drying and better business! Standard's exclusive direct driven fan operation and precision control of heat, humidity and ventilation have helped operators throughout the woodworking industry to increase output, virtually eliminate waste, and to get uniform quality in every kiln load.

Whether you need a new kiln, a full battery of kilns, or need to bring your old natural draft installations up to modern, money-making par, consult Standard engineers . . . put Standard Kilns to work for YOU!

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Twisting, crooking and bowing prevented by a few cents worth of

Signode Steel Strapping

Try this idea! Tension Signode Steel Strapping around your green dimension lumber before air drying. At the end of the drying period, lumber will come from the piles straight and true. That means *more salable lumber, more profits!*

Keeps retailers happy

Misshapen lumber cuts into your retailers' profits also. Retailers, receiving it repeatedly look elsewhere for their supplies. Thus, the few cents worth of Signode Steel Strapping you applied prevents losses in air drying—also is a good will builder!

Shiploads strapped

Hundreds of mills and retail yards bundle lumber with Signode Steel Strapping for shipment by rail or by truck. The reasons: speeds handling and stowing; discourages pilferage; prevents accidental loss; permits safer handling by fork or straddle trucks; ends pile spilling and increases safety for workmen.

We teach yard crews

Your yard crew can be taught quickly to bundle lumber for drying or shipping with Signode Steel Strapping. Our fieldmen will teach them. To have a fieldman call, write

*Another exclusive service proved and tested for you by Signode.

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Wood and Wood Products will pay $5.00 for each published Out in the Shop item submitted by readers. Items must be practical—helping to do a job better and easier. Clear photo and short explanation necessary. The Editors.

More chair backs with this jig

Operator places steamed chair back in place. Piece is forced into jig by power. Operator locks jig together with a cross-bar—see assembly held by man at right. Human effort is minimized; production is upped. (Pat. Pending) Connor Land & Land. Co., Laona, Wis.

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Lumber shed floor is above car floor for easy handling. Lift truck puts previously graded loads endwize to car for least handling. Rejects are slid to back of shed. Connor Lumber and Land Co., Laona, Wis.

Appalachian hardwood News

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HEMLOCK-HARDWOODS-

FLOORING-DIMENSION

ROBBINSVILLE, N. C.

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Biltmore Appalachian Hardwoods, Inc.

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APPALACHIAN HARDWOOD LUMBER

Dry Kilns and Planing Mill

Biltmore Station, Asheville, N. C., Tel: 2-0151

Code: 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 25, 26, 27, 31, 35

Ely-Thomas Lumber Company

Quality Hardwoods

General Office
CAMDEN-ON-GAULEY, W. VA.

Kiln Drying Facilities — Planing Mill

J. P. HAMER LUMBER COMPANY

Manufacturers
Appalachian Hardwoods

Kenova, West Virginia

Code: 3, 6, 7, 8, 10, 11, 13, 17, 19, 20, 21, 29, 30, 31, 32, 33, 40

W. C. HENNESSEE LUMBER CO. Inc.

Manufacturers
Appalachian Hardwood Lumber

Sylva N. C.

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Marshall Lumber Company

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Telephone 198

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MILLETT HARDWOOD LUMBER Co.

Appalachian North & South Central Hardwoods

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Louisville 2, Ky.

Telephone Clay 2800

Hardwood Research Project

The special research project sponsored by a number of Appalachian hardwood manufacturers was reviewed in a report by Carl A. Bishell, director of research, Timber Engineering Co., Washington, D. C. at the recent summer meeting of the Appalachian Hardwood Manufacturers Association. The project consists in a number of tests involving white oak for laminating purposes, which were authorized because of differences of opinion between the manufacturers and the United States Navy as to the type of lumber suitable for laminating purposes.

Mr. Bishell, in his discussion, added a great deal to the general understanding of the subject, although the results of the tests had already appeared in a formal report. The tests were made at the TECO laboratory and were completed in a little more than four months. Mr. Bishell used a projector to show photographs of how the tests were made.

Conservation and Private Industry

The above subject was discussed at the Appalachian hardwood summer meeting by Dr. Maurice G. Brooks, Division of Forestry, University of West Virginia. The speaker declared that the vast timber acreage in private hands, particularly in the eastern part of the United States, posed a problem that presented both a challenge and an opportunity. It could be demonstrated by the owners, according to Dr. Brooks, that private management from the standpoint of conservation is much more effective than from bureaucratic control.

However, on the other hand, if private interests fail to meet the obligation which is theirs to plan for the renewal of the natural resources of the nation, they are subject to the challenge of those who are clamoring for federal control of all timber land, on the claim that their superior methods will insure the future supply of lumber for the nation.

THE MOWER LUMBER COMPANY

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VESTAL LUMBER & MFG. CO.

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Knoxville 9, Tenn.

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WARNER LUMBER COMPANY

"Quality Appalachian Hardwoods, Hemlock and White Pine"

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West Virginia Hardwoods, Inc.

Manufacturers & Wholesalers
Appalachian Hardwood Lumber

Kenova, W. Va.
Telephone 2171

Code: 6, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 29, 30, 31, 32, 33, 35, 36, 37, 39, 40, 41

J. WALTER WRIGHT LUMBER COMPANY

Manufacturers & Wholesalers
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UNION TRUST BUILDING
BRISTOL, TENN.

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CODE . . .			
1	Bandmill	22	Sycamore
2	Resaw	23	Walnut
3	Circular Mill	24	Others
4	Planing Mill	25	Hemlock
5	Dry Kilns	26	Pine-White
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7	Basswood	28	Spruce
8	Beech	29	Oak Planking
9	Birch	30	Oak-Car Stock
10	Buckeye	31	Oak-S.S.E.
11	Butternut	32	Oak-Truck Body
12	Chestnut	33	Oak-Timbers
13	Cherry	34	Cross Ties
14	Gum-Black	35	Oak Flooring
15	Hickory	36	Maple Flooring
16	Locust	37	Beech Flooring
17	Maple-Hard	38	Dimension Semi Fin. & Fin.
18	Maple-Soft	39	Dimension Rough
19	Oak-Red	40	Stepping Pl.
20	Oak-White	41	Mouldings
21	Poplar	42	Others

Markets

These prices are estimates made available by Mr. George Land, publisher of the *Hardwood Market Report*, and reflect prices as indicated in his copyrighted issue of September 6, 1952. Mr. Land's complete report is available weekly; those who want the entire list should contact him c/o Box 5716, Memphis 4, Tenn.

Note: For your convenience each price change is marked by an asterisk (*).

SOUTHERN HARDWOODS

F.O.B. mills—Texas & Louisiana area—estimate of present FOB Texas & Louisiana mill point average ceiling price sales made subsequent to January 25, 1951 to consuming trade on hand-sawn Southern Hardwoods in carload quantities, random widths & lengths, rough air dried & graded in accordance with NHLA rules on inspection. Prices in dollars per M', on straight cars of upper bracket grades premiums are frequently being paid.

	FAS	No. 1C	No. 2C
ASH—FIRM TEXTURE			
4/4-in.	155	110	62
6/4-in.	170	120	67
8/4-in.	180	140	70
BASSWOOD			
4/4-in.	160	125	80
6/4-in.	170	135	87
8/4-in.	180	145	90
BEECH			
4/4-in	125	100	55
6/4-in.	140	110	60
8/4-in.	167	127	72
CHERRY			
Same as Appalachian			
RED GUM—PLAIN			
4/4-in.	200	150	70
6/4-in.	230	170	75
RED GUM—QUARTERED			
4/4-in.	220	165	75
6/4-in.	250	190	90
8/4-in.	260	200	95
SAP GUM—PLAIN			
4/4-in.	105*	85*	40
6/4-in.	122*	102*	45
8/4-in.	160	140	
HACKBERRY			
4/4-in.	110	90	60
6/4-in.	120*	100*	70*
8/4-in.	135	110	75
SOFT MAPLE—WHAD			
4/4-in.	130	110	67
6/4-in.	145	120	77
8/4-in.	155	125	80
SOFT MAPLE—WHND			
4/4-in.	115	90	60
6/4-in.	130	105	75
8/4-in	135	110	80
RED OAK—PLAIN			
4/4-in.	170	100	62
6/4-in.	190	135	
8/4-in.	200	140	
WHITE OAK—PLAIN			
4/4-in.	180	115	62
6/4-in.	195	140	
8/4-in.	205	145	
PECAN			
4/4-in.	110	90	40
6/4-in.	130	110	60
8/4-in.	155	130	65

	FAS	2&S	No. 1C
POPLAR—PLAIN			
4/4-in.	165	155	135
6/4-in.	185	175	140
8/4-in.	205	195	150

	FAS	No. 1C	No. 2C
SYCAMORE—PLAIN			
4/4-in.	115	95	60
6/4-in.	125	105	60
TUPELO—PLAIN			
TUF TEXTURE—DEEP SWAMP			
4/4-in.	105*	85*	40
6/4-in.	122*	102*	45
8/4-in.	160	140	
WILLOW			
4/4-in.	130	110	60
6/4-in.	143	123	67
8/4-in.	150	135	70

APPALACHIAN HARDWOODS

F.O.B. mills—Johnson City, Tennessee area—estimate of present FOB Appalachian mill point average ceiling price sales made subsequent to January 26, 1951 to consuming trade of hand-sawn Appalachian hardwood in carload quantity, random widths & lengths, rough, air dried & graded in accordance with

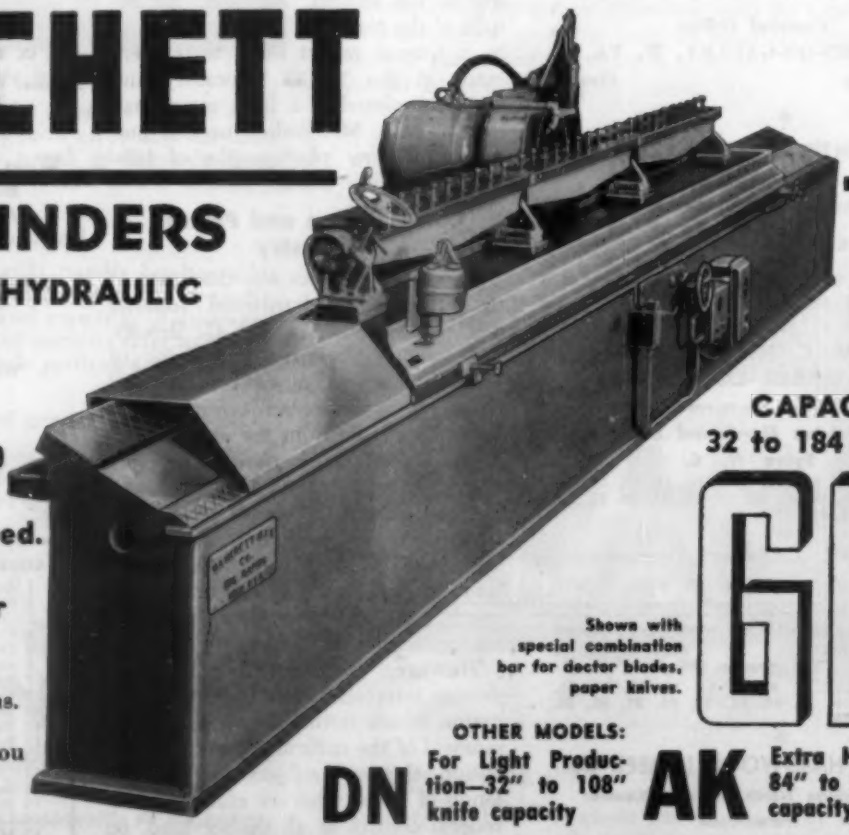
HANCHETT

KNIFE GRINDERS

TABLE DRIVEN • HYDRAULIC

FULL AUTOMATIC

ELECTRICAL



HANCHETT GRINDERS

CAPACITY
32 to 184 inches

6K

Shown with special combination bar for doctor blades, paper knives.

Speeds from 10 to 80 feet per minute.

Faster speeds if required.

Available with either Segmental or Cylinder Type Wheels.

Tell us your knife problems. Our engineers may have a money-saving solution for you

Write Dept. WWP-102

OTHER MODELS:

DN For Light Production—32" to 108" knife capacity

AK Extra Heavy Duty 84" to 360" knife capacity

HANCHETT MANUFACTURING CO.

Main Office — BIG RAPIDS, MICH.
West Coast — PORTLAND 4, ORE.

NHLA rules of inspection. Prices in dollars per M'. on straight cars of upper bracket grades, premiums are frequently being paid. Basis selected for the purpose of indicating transportation costs to principal consuming markets from Johnson City, Tennessee area.

TOUGH ASH

	FAS	FIF	No. 1C	No. 2C
4/4-in.	160	150	110	67
6/4-in.	180	170	122	72
8/4-in.	190	180	147	85

BASSWOOD

				No. 2A
4/4-in.	180	170	130	80
6/4-in.	190	180	137	94
8/4-in.	195	185	147	96

BEECH

				No. 2C
4/4-in.	145	135	110	65
6/4-in.	160	150	120	75
8/4-in.	170	160	130	80

BIRCH

4/4-in.	230	220	150	80
6/4-in.	245	235	160	85
8/4-in.	250	240	165	90

BUCKEYE

4/4-in.	135	125	100	65
6/4-in.	160	150	115	73
8/4-in.	165	155	120	78

CHERRY

4/4-in.	220	210	150	90
6/4-in.	240	230	170	95
8/4-in.	250	240	180	100

CHESTNUT

	FAS	No. 1C	FAS WHND	1C & B WHND
4/4-in.	165	115	135	125
6/4-in.	170	120	140	130
8/4-in.	175	125	150	140

HICKORY

	FAS	FIF	No. 1C	No. 2C
4/4-in.	125	115	78	53
6/4-in.	145	135	86	58
8/4-in.	165	155	90	60

HARD MAPLE

4/4-in.	190	180	125	80
6/4-in.	200	190	135	84
8/4-in.	205	195	145	90

SOFT MAPLE

4/4-in.	160	150	115	67
6/4-in.	170	160	125	69
8/4-in.	175	165	130	72

RED OAK—PLAIN

4/4-in.	185	175	120
6/4-in.	200	190	135
8/4-in.	215	205	145

WHITE OAK—PLAIN

4/4-in.	200	190	125
6/4-in.	220	210	145
8/4-in.	225	215	155

WHITE OAK—WHND

	FAS	FIF	C & B	No. 1C
4/4-in.	115	105	90	85
6/4-in.	140	130	120	110
8/4-in.	150	140	125	115

YELLOW POPLAR—PLAIN

	FAS	FIF	No. 1C	No. 2A
4/4-in.	210	200	135	80
6/4-in.	215	205	140	93
8/4-in.	225	215	155	..

POPLAR SQUARES

	FAS	No. 1C & SD
4x4-in.	245	175
6x6-in.	280	190
8x8-in.	340	240

WALNUT—STEAM TREATED

	FAS 6' & up	FIF 6' & up	No. 1C	No. 2C
4/4-in.	350	305	185	80
6/4-in.	370	325	210	95
8/4-in.	385	340	235	100

Walnut list reflects average fob mill, all areas. Basing point not generally observed.

NORTHERN HARDWOODS

Estimate of present FOB Wausau, Wisconsin mill point average ceiling price sales made subsequent to January 25, 1951 to consuming trade on band-sawn Northern hardwoods in carload quantities random widths & lengths, rough air dried & graded in accordance with NHLA rules on inspection. Prices in dollars per M'.* On straight cars of upper bracket grades, premiums are frequently being paid.

BROWN ASH

	FAS	No. 1C	No. 2C
4/4-in.	145	105	73
6/4-in.	155	120	83
8/4-in.	160	130	88

BASSWOOD

4/4-in.	180	135	78
6/4-in.	190	135	88
8/4-in.	195	145	96

BEECH

4/4-in.	145	100	68
6/4-in.	160	115	78
8/4-in.	165	120	80

BIRCH

4/4-in.	265	145	80
6/4-in.	275	160	90
8/4-in.	280	175	100

ROCK ELM

4/4-in.	135	115	65
6/4-in.	145	125	75
8/4-in.	150	135	80

SOFT ELM

4/4-in.	125	105	71
6/4-in.	135	115	81
8/4-in.	140	120	86

HARD MAPLE

4/4-in.	190	130	78
6/4-in.	200	140	81
8/4-in.	205	145	82

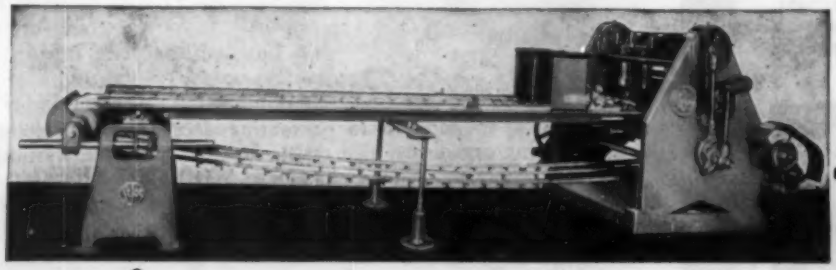
SOFT MAPLE

4/4-in.	155	120	72
6/4-in.	170	130	82
8/4-in.	185	140	90

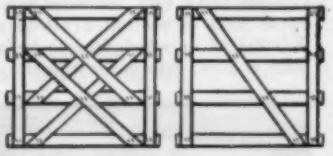
RED OAK

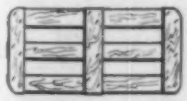
4/4-in.	175	125	77
6/4-in.	185	145	83
8/4-in.	195	155	85

*Air dried Northern Hardwoods are no longer available and sales presently being made cover green stock or stock only partially seasoned. Orders are being placed for stock to be cut and shipped green when accumulated.



ST. JOE HI-SPEED AUTOMATIC CRATE STAPLER





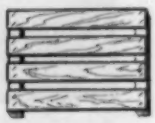
when **VARIETY** *pays off*

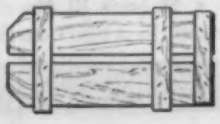
Are you continuously faced with the problem of turning out orders of a varied and complicated nature? Production men in the container field are making this type of work *pay-off* with ST. JOE stapling equipment.

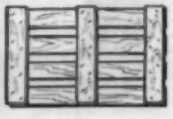
The ST. JOE Hi-Speed Crate Stapler (illustrated), the Selective Pattern Stapler and the Flatwork Stapler, are all built to produce these and many other designs.

It will pay you to check with St. Joe Machines, Inc. on your next container fastening problem. No Obligation.

ST. JOE MACHINES, Inc. ST. JOSEPH MICHIGAN



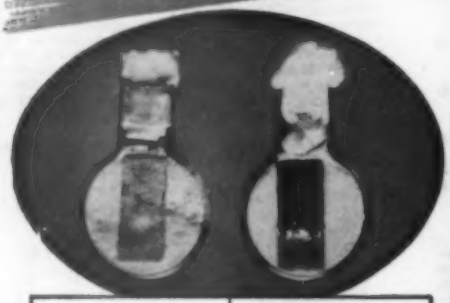




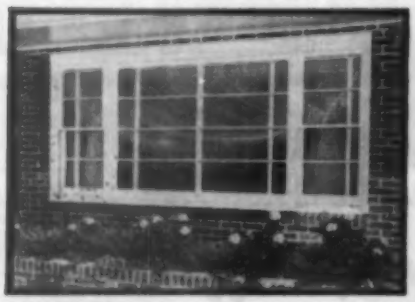
It's Profitable to Make Millwork And Lumber Last Longer!

WOODTOX 120

5% PENTA WOOD PRESERVATIVE WITH WATER REPELLENT



Two 2 x 4 sections exposed to decay organisms in Kolle flasks. Left, untreated section; right, upper part of section brush-treated with WOODTOX on which decay cultures can't be made to grow, even in the laboratory.



In installations up to 15 years old, sash and doors continuously exposed to severest decay and weathering conditions show no deterioration.

Beverage cases last 3 or more times longer by actual test when treated with WOODTOX. Repair costs are virtually nil—cases are easier to keep clean and sanitary.

Applications of WOODTOX to make wood products last longer are practically endless. Learn what WOODTOX can do for you.

WOODTOX is furnished in cans, drums, or tank cars for industry use; or 1-gallon and 1-quart cans in display cases for retail sale.

WOOD TOX — *What It Is*

WOODTOX is a Pentachlorophenol base preservative plus perfected water repellents in a quick evaporating, penetrating petroleum carrier, providing many desirable characteristics for imparting longer life to wood and wood products. The superiority of PENTA for protection of wood against fungi, termites and other wood destroying insects has been proved by 15 years of use in every conceivable application.

WOODTOX is a clear, clean, non-staining oil solution for treatment of millwork and lumber products. It conforms to or excels National Woodwork Manufacturers Association standards for water repellent efficiency. Also complies with NWMA and Western Pine Association preservative standards. It is widely used by the Army (U. S. Engrs. Spec. 3-186) for treatment of truck bodies, etc.; by the Navy (Spec. MIL-P-906A) for carrier decks, etc.; and the Air Force (Spec. AN-P-76) for plywood, etc.

WOOD TOX — *What It Does*

WOODTOX, in addition to preventing decay by toxic action against living organisms, also resists staining, swelling, warping, shrinking, checking, mold and mildew. WOODTOX also acts as a primer that deters the blistering and peeling of surface finishes —and, after several days' drying time, will not impair the handling or paintability of wood.

WOOD TOX — *A Tremendous Sales Potential!*

Multiplying the service life many times of sash and doors, millwork, flooring, boxes, plywood and innumerable other lumber items, is a sure-fire formula for improving product acceptability—for injecting new life into slumping merchandising plans—and for boosting sales among dealers and users. No matter what you make from wood, the relative low cost of WOODTOX offers you unlimited possibilities for greater sales and greater profits.

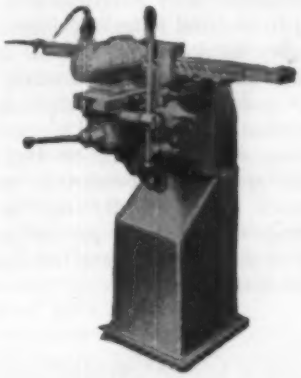
Write Today For Details

Wood-Treating Chemicals Co.

5137 Southwest Ave. • St. Louis 10, Mo.

WOODTOX, TIMBERTOX, and a Complete Line of Wood Preservatives

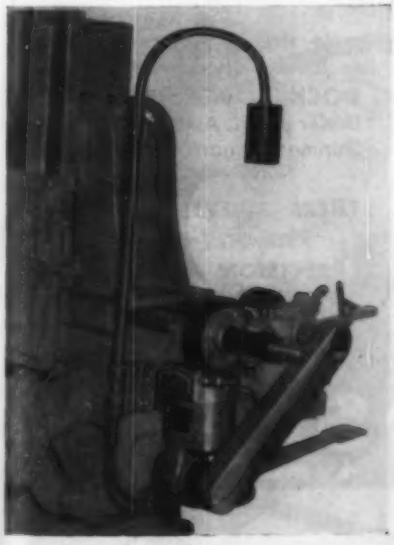
New and Improved Products



Louver Stile Grooving Machine

A new and comparatively inexpensive louver stile grooving machine has been introduced by Festo Woodworking Machines, Dept. W, 745 51st St., Brooklyn, N. Y. For interior louver work, such as closet doors, louver inserts in flush doors, folding walls, etc., this machine is capable of continuous cutting. A full load speed of 10,800 r.p.m. combined with a practical arranged single lever movement, makes it a clean cutting and rapid operating machine.

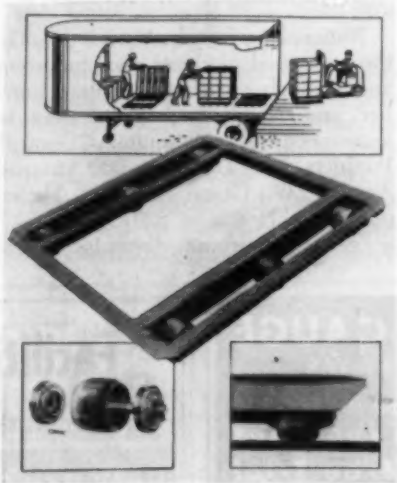
Door stiles up to 6 inches wide and any length can be grooved. The cutter-head has a graduate dial and can be set to any angle. Another feature is the simple setting-up for different jobs, which takes only a few minutes.



Power Device for Band Resaws

A power attachment for opening and closing the feed rollers of the McDonough 44-inch and 54-inch Vertical Band Resaws has just been announced by the McDonough Manufacturing Co., Dept. W, Eau Claire, Wis.

This device consists of a right-angled gear head motor which drives the opening and closing mechanism of the feed rollers through a roller chain and sprocket. The power drive duplicates any hand operation of the feed rollers for any type of sawing such as gauge or center sawing. The mounting of the power drive and switch does not interfere with the tilting of the rolls for bevel sawing. The control switch and mounting which places the switch within easy reach of the operator is included with the attachment.

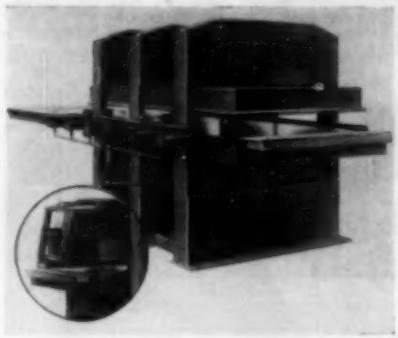


Pallet Roller

The Frank L. Robinson Co., Dept. W, Latham Square Bldg., Oakland 12, Cal., has placed on the market its Ace "Stevedore King" Pallet Roller for loading and unloading trucks, trailers, etc. Speed and economy resulting from the elimination of hand trucking, fork truck tie-ups, and extra labor costs are said to be features of this new pallet roller. For complete information, write to the manufacturers at the above address.

Tool for Chemical Debarking

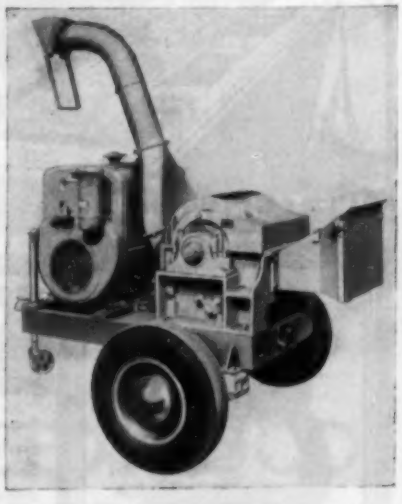
The Northeast Pulpwood Research Center has developed a special tool for girdling trees that are to be treated for bark removal. It is generally limited to bark not over 5/8-in. in thickness, and the present size permits the removal of a 4-in. strip of bark, without cutting into the sapwood. Another convenient unit is available—a back pack tank and pressure unit for applying the poison to the girdled trees. For complete information write Woodlands Equipment, P. O. Box 334, Dept. W, Gorham, N. H.



Hot Press

The "VB" Double Opening Hot Press is available with hydraulic side-pressure attachments while the "VB" Single Opening Hot Press is available with both hydraulic side and end pressure attachments. Many manufacturers have found these features of the "VB" Hot Press a decided advantage in the manufacture of lumber core veneered panels. The use of these attachments eliminates sunken joints in the panels due to unequalized moisture and pre-planing of the core prior to the veneering operation. It also eliminates core clamping and other costly operations preceding the actual veneering of the panel.

For further information write to V. Berthelsen Engineering Works, Inc., Dept. W, P. O. Box 1423, Lockport Road, Joliet, Ill.



Portable Brush Grinder

A new machine for brush disposal is announced by Mitts & Merrill, Dept. W, Saginaw, Mich. It is a Portable Brush Grinder with its own power plant for grinding up branches, tree trimmings and brush optional into

small wood chips. It is designed to greatly simplify brush disposal, and because of the labor and hauling costs it saves, it can be expected to pay for itself in a relatively short time. It is claimed that one M & M Brush Grinder will reduce seven truckloads of brush to one truckload of wood chips.

Self-Contained Humidifier

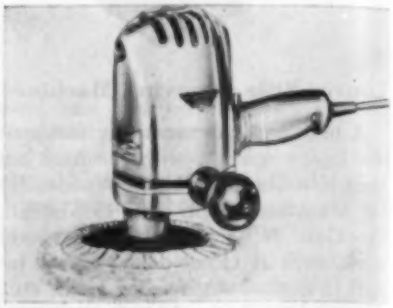
The new Type E Humidifier is designed for use in industrial spaces and is said to be valuable for controlling moisture content during storage and processing of wood. Units may be used for complete humidification systems, for spot humidification in large spaces, for boosting the capacity of existing systems, and for precise humidity control in laboratories.

The self-contained units are quickly and simply installed by suspending from ceiling, then connecting water supply and electricity. Water is atomized by centrifugal force and distributed horizontally through a 360° opening. Any portion of the discharge opening may be blocked off for directional distribution. Units evaporate up to 3 gallons per hour and may be installed singly or in groups with automatic control. Each unit will humidify several thousand cubic feet of room volume at normal conditions. Write to The Bahnson Co., Dept W, 1005 S. Marshall St., Winston-Salem, North Carolina.

Wood Stabilizer

National distribution directly through wood products manufacturers and through distributors selling lumber and wood products dealers is announced by Nelsonite Chemical Products, Inc., Dept. W, 900 Monroe Ave., N. W., Grand Rapids 2, Mich., on its new, Nelsonite #30 "Paintseal," a general purpose formula which stabilizes wood against swelling, shrinking, warping and checking while priming surfaces for paint or other finishes.

Nelsonite #30 Paintseal is specifically formulated to impart dimensional stability to doors, cupboards, sashes, siding and cornices, panelling and other wood articles. It is also valuable as a paint mix which keeps paint from peeling and blistering on buildings, boats and weather-exposed wooden surfaces generally. It may be lacquered, varnished or painted and is said to give an excellent hold-out for these finishes.



Sander-Polisher

Millers Falls Co., Dept. W, Greenfield, Mass., announces the new No. 966 Sander-Polisher. Basically, it is a

Tannewitz
HIGH SPEED
BAND SAWS

Saws faster, smoother and easier than conventional band saws. Regularly increase production from 50% to 100% with consequent reduction of costs. Built by sawing machinery specialists. Write for circular.

THE TANNEWITZ WORKS
GRAND RAPIDS 4, MICHIGAN

Facilities To Serve You

DRY KILNS—20 Tracks of Latest Moore Design Capacity 1 million feet per charge.

DRY SHEDS—Ample storage Adjacent to Carline Means Dry Lumber for you.

DRY LOADING DOCK—Can Load 19 Cars Under Roof. Assures you quick Shipment Regardless of Weather.

THERE IS NEVER A LET DOWN IN OUR QUALITY-PRECISION MANUFACTURE

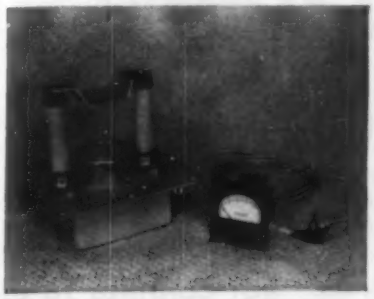
The Ralph L.
SMITH
Lumber Company

ANDERSON, CALIF.

Mills: Anderson & Canby, California
Sales Office: Anderson, California

powerful disc sander and polisher. It can also be used with many rotary accessories such as drills, grinding wheels, etc. But what makes it unique is a special orbital attachment for fine finishing. Equipped with this attachment, the No. 966 has a wide range of usefulness and can handle practically every type of finishing work.

It can be used for cleaning, finishing and polishing just about any surface or material—wood, metal, plastic, etc. For rotary operation, it is furnished complete with 6-in. flexible rubber pad, 6-in. lamb's wool bonnet and 6 6-in. aluminum oxide sanding discs in assorted grits.



Radio Frequency Voltmeter

A voltmeter that measures RMS values of radio frequency voltages in dielectric heating loads is available from Westinghouse Electric Corp., Dept. W, 401 Liberty Ave., Box 2278, Pittsburgh 30, Pa.

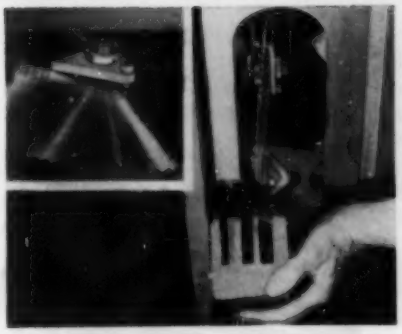
The use of this instrument will indicate to the operator of a dielectric heating apparatus the amount of heat that is being applied to the electrodes. Previous trial and error methods of electrode adjustment are said to be eliminated.

The voltmeter consists of a capacity voltage divider and a crystal rectifier unit, connected to an indicating instrument calibrated in kilovolts. No external power is required for operation other than that taken from the RF voltage source. This will be less than 0.1 watts.

Cut Grooves With Saw Blade

The invention of a simple dado attachment which permits a regular circular saw blade to cut grooves of any width is now being marketed under the name Da-Dall.

Unlike other dado attachments, the Da-Dall consists of only three parts which are easily mounted on the saw shaft along with any saw blade. There are no special choppers, blades or washers. Once mounted, the Da-Dall can be left on the saw at all times. The outstanding feature is its simple



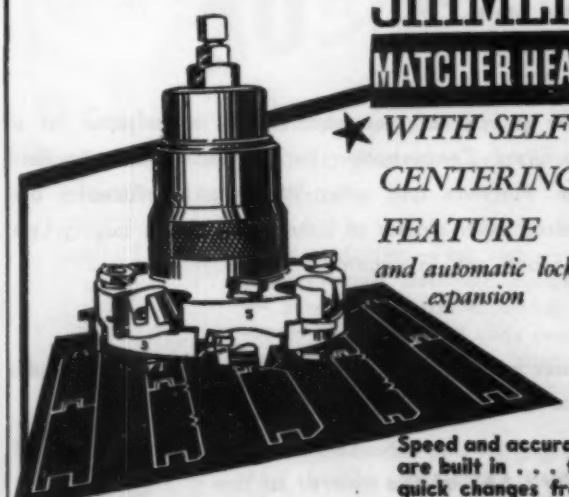
operation. It is the only adjustable dado with a single screw adjustment. To cut a groove, just loosen the jam nut, turn the micro adjusting screw to the desired width, and tighten the jam nut. For delivery information, write Da-Dall Co., Dept. W, 725 Second Street, San Francisco 7, Cal.

Air Transformer

Users of compressed air will find the DeVilbiss Company's newly introduced HLD Air Transformer, described as being more efficient, easier operating, sturdier constructed and having a greater capacity.

The transformer has a built-in-two-stage regulating principle which provides for easier adjustment of pressures, requiring only finger tip

CLEAN, ACCURATE, FAST CUTTING
FLOORING -- CEILING --
SIDING -- WAINSCOTING
SHIMER
MATCHER HEAD
★ WITH SELF CENTERING FEATURE
and automatic lock expansion



Speed and accuracy are built in . . . for quick changes from thick-to-thin cuts or pattern to pattern . . . with only one set of heads!

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MILTON, PENNA.

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PLYWOODS
Hardwood Plywoods for Quality Trade

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Valuable Sales Directory — This comprehensive credit rating book lists quantity buyers of lumber and allied products thruout the United States.

● From no other source can you obtain such a complete list of Lumber Manufacturers, Concentration Yords, Wholesalers, Retailers, Commission Men, Furniture and other Woodworking factories and almost one hundred other classes of industrial concerns buying Lumber, Veneer, Plywood, etc. in quantity.

● Street addresses are shown in the larger cities, making possible low postage rate circularization.

For subscription terms address Department "AA" of the nearer of the offices shown below

LUMBERMEN'S CREDIT ASSOCIATION INC.

608 South Dearborn St.
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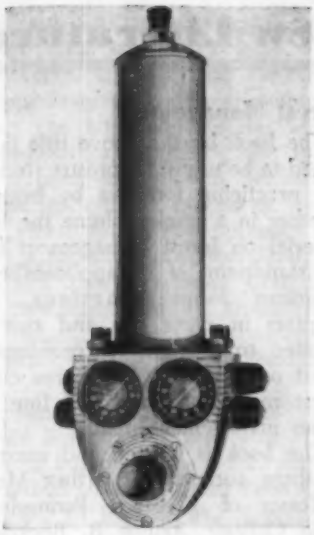
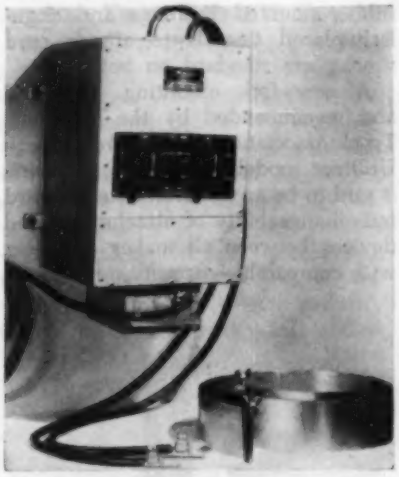


control of the adjusting knob. The knob actuates a small pilot regulator which in turn operates the diaphragm of the large regulator, thus giving ease of operation. The two-stage regulator also provides for closeness of pressure regulation and low pressure loss.

Oil and moisture, present in all compressed air lines, is eliminated by the HLD transformer which traps the liquids and delivers clean air to all outlets. In tests, 97 percent of entrained water was removed from 100 CFM of air at 100 pounds pressure. For complete information, write to the DeVilbiss Co., Dept. W, 459 Spitzer Bldg., Toledo 4, Ohio.



Resistance Heater

The wide acceptance of resistance-heated flexible strips to speed the gluing of Formica and wood veneers to the edges of furniture panels has resulted in the design of a new transformer greatly improved in appearance and in ease of use.

Previous models required a change of output cable connections to vary heating capacity or heating speed. The new model BU-30-S Washburn Heater includes rotary tap switches which allow instant change of output voltage to control heating speed or to select proper output for longer or shorter heating elements. The quick power change is particularly useful when two jigs are being used alternately from the same transformer and an instant voltage change at each curing cycle is required. For additional information, write to the Washburn Electric Co., Dept. W, 96 Dwight place, Englewood, N. J.

Wood Boring Machine

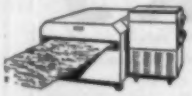
The new Root Style KH-250 is primarily a wood boring machine for the production boring of dowel and screw holes for the manufacture of office and household furniture, cabinets and wood articles of a kindred nature.

The machine will bore two or three holes on close or extended centers, with holes either in a straight line or staggered. It is precision designed so that clean parallel holes can be bored with accuracy so the component furniture parts can be fitted with dowel

Are You Spending Hours to do a 30 Second job

Could be . . . unless you're using modern electronic gluing and laminating methods.

Mann-Russell RF Generator



Mann-Russell Veneer Edge-Gluer

Mann-Russell Lumber Edge-Gluer

Speed production — cut costs — with Mann-Russell Electronic equipment — generators, patchers, lumber and veneer edge-gluers. All units custom-designed to meet your particular needs and installed by factory-trained experts.

If your production calls for gluing up short lengths, edge-gluing hard or soft wood veneers, or other lamination — write today for specific data, outlining your problem.

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Our three mills are located in the Mississippi, Atchafalaya and Red River basins of Louisiana which produce the finest Willow in America.

Large and well assorted stocks of this fine willow are ready for immediate mill shipments at all times. We can meet your exact needs, all thicknesses and grades 4/4" to 8/4" or include in mixed cars with Port Barre white ash and other Southern Hardwoods. Prompt attention will be given to all inquiries.

The Port Barre Lumber Industries, Inc.

Manufacturers of Southern Hardwoods
Port Barre, La.

pins or screws, for rapid final assembly with a minimum of hand fitting.

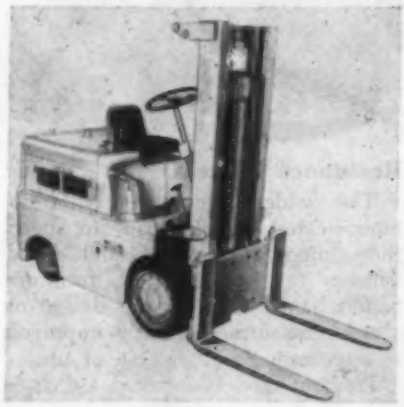
Full information and technical data is contained in Bulletin No. 191 which will be mailed upon request to the B. M. Root Co., Dept. W, York, Pa.

New Fork Truck

For ruggedness and high serviceability in the 6000-to-7000-pound range, the new model Utilitruc, gas or electric powered, announced by the Clark Equipment Co., Industrial Truck Division, Dept. W, Battle Creek, Mich., features major improvements. Designed for endurance, efficiency and ease of maintenance and repairs, the new fork-lift trucks are now available for the market.

Compact in every respect, these new trucks have a turning radius well within the limitations of practical aisle widths, and are highly maneuverable in close quarters. The center-pivoted steering axles, with rubber-mounted bushings and angularly-placed tie-rods to absorb road shocks, are standard on both types.

A new fork mounting, approved and recommended by the Industrial Truck Association, is standard on both Utilitruc models. This new mounting is said to be an important step toward interchangeability of attachments and devices between all makes of trucks with comparable capacity.



New Literature

Forest Management

The book by the above title is designed to be useful to forestry students and practicing foresters by bringing together in a single volume the basic material on forest management from the standpoint of its applicability to American forest practices. The chapters in parts one and two are devoted to the general problems of forest organization. Part three covers forest regulation, and part four discusses management plans.

The book is written and compiled by three authors: H. Arthur Meyer, professor of Forestry, Pennsylvania State College; Arthur B. Recknagel, technical director of forestry, St Regis Paper Co.; Donald D. Stevenson, research advisor in forestry, Office of Foreign Agricultural Relations, U. S. Department of Agriculture. It is published by The Ronald Press Co., Dept. W., 15 E. 26th St., New York 10, N. Y.

Forest Inventory

This new volume is a comprehensive report on present-day forest mensurational techniques. It deals with

"OLIVER" DISK & BELT SANDER

A double-duty machine for fast, accurate sanding

This sturdy "Oliver" Sander has a 15-inch disk with a table that tilts 45° down and 25° up. Two gauges enable you to sand angular and circular work smoothly and without fuss. A 6-inch belt sanding attachment on opposite end of motor can be operated in a vertical or horizontal position. Sander is especially effective on straightline work. Write for Bulletin No. 182-DB.

"Oliver" makes a quality line of woodworking equipment

OLIVER MACHINERY CO., Grand Rapids 2, Mich.

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VENEERS

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MELLEN, WISCONSIN

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TELETYPE, MELLEN 29—PHONES 205 - 3313

the measurement of trees and stands, the estimation of their volume, the prediction of growth, and sampling problems involved in forest inventory design. The book concentrates upon the problem of estimating the total gross volume and growth per acre, whether for a given species or for a given forest type. The approach is largely a statistical one, tempered by logic and the knowledge that the forest tree is not simply a geometrical solid, but a biological unit which is not definable in purely mathematical terms.

Stephen H. Spurr, associate professor of Forestry, University of Minnesota, is author of the book, and it is published by The Ronald Press Co., Dept. W., 15 E. 26th St., New York 10, N. Y.

Two New Model Sawmills

A new catalog has just been released by The Enterprise Co., Dept. W, Columbiana, Ohio, illustrating and describing their Models 21 and 34 Sawmills. These models are similar in appearance, except that the Model 34 mill is of heavier construction and is recommended for rugged, heavy-duty operation. They are built by precise production methods from high-quality materials, and are designed to meet the exacting demands of accuracy, production volume, and economy of operation. Copies may be had by writing the company at the above address.

Lumber, From Forest to You

The above is the title of a booklet just issued by the National Lumber Manufacturers Association, Dept. W, 1319 Eighteenth St., N. W., Washington 6, D. C. It is a present day review of the organization, economics, progress and accomplishments of the lumber industry. The 24-page booklet was compiled to help promote a better public understanding of the tremendous progress of the industry during the past several years, and of the industry's aggressive research and tree growing work. It also presents a glossary of lumbermen's technical terms, and includes a comprehensive listing of references for those desiring fuller knowledge of a particular phase of the lumber industry.

Pathology in Forest Practice

This book, the second edition by the above title, presents the "inside story" of the origin, nature, and causes of diseases in trees and forests throughout the United States, Canada, and Europe. It tells how to check, regulate, and control pests and diseases that destroy or limit the usefulness of trees and products, and how to save money by accurately diagnosing the disease and its cause. It is written by Dow Vawter Baxter, professor of forest pathology, school of natural resources, University of Michigan. For complete information write to John Wiley & Sons, Inc., Dept. W, 440 4th Ave., New York 16, N. Y.

Better Frames for Pictures

The need for practical, "know how" information on the selection, type, and manufacture of picture frames was the objective of Frederic Taubes, the author of this book. Some of the subjects covered include: Treatment of raw-wood frames; General treatment of wood surfaces; Miter cutting and joining; Relative cost of materials; etc. For complete information, write Studio—Crowell, Dept W., 432 Fourth Ave., New York 16, N. Y.

Ball Bearing Moulders

Two new circulars have just been issued by the Mattison Machine Works, Dept. W, Rockford, Ill. containing the latest pictures and specifications on the Mattison 229 and 226 Moulders. The No. 229 Moulder is built in sizes 6 inches by 4 inches, 8 inches by 4

NORTH COAST DIRECT-FLO® DRY KILN

Reversible Circulation • Uniform Drying

NEW KILNS • KILN MODERNIZATION • KILN ACCESSORIES

The North Coast Dry Kiln is the most efficient kiln in operation today. The fans are positioned at the side of the lumber loads so that air follows the shortest possible "Direct-Flo" path. This insures uniform efficient drying for the lowest possible power consumption.

We can manufacture kilns to your specifications.

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Let M & M Disposal Equipment turn your waste into profits. These machines are built in many types and sizes for slabs, edgings, trim, blocks, veneer, bark, and other combustible waste. Don't overlook the extra dollars that can come from utilizing every available bit of waste. Send us your problem and we'll show you how M & M Disposal Equipment can solve it.

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inches, and 10 inches by 4 inches. The No. 226 Moulder is built in a 12-inch by 6-inch size, and the No. 228 Moulder in a 16-inch by 6-inch size. Copies of these circulars may be obtained by writing to the manufacturers.

Why Creosote Protects Wood

A new booklet on the subject of why creosote protects wood today every bit as well as fifty years ago has just been issued by the Koppers Co., Inc., Tar Products Division, Dept. W, Pittsburgh 19, Pa. The subject matter of the booklet is said to be based on facts that give a complete answer to any question about the quality of today's creosote. A copy may be had by writing to the Koppers Co. at the above address.

The Southern Pine Story

The woods, the mill, the men who work with the product of the Southern forests—all of these are a part of The Southern Pine Story, a new booklet published by Southern Pine Association, New Orleans. With vivid text and colorful illustrations, the booklet begins with the tree, explaining what Southern Pine is, where it grows and what its characteristics are.

Following this is a history of Southern Pine, a story that goes back to the time when Captain John Smith made his first report to the Virginia Company in 1608. Free copies of the booklet may be obtained by writing Southern Pine Association, Dept. W, Box 1170, New Orleans, La.

Elevating Table Literature

A revised Bulletin #232 is being issued by The Raymond Corporation, formerly Lyon-Raymond Corporation, describing the company's standard Hydraulic Elevating Tables. Features of the product are outlined and actual on-the-job illustrations serve to emphasize the wide adaptability of the equipment. Full specifications are described. Write to The Raymond Corporation, 24793 Madison St., Greene, N. Y., for a copy of Bulletin #232.

Northwest Forest Taxation

Timber tax structures in the Pacific Northwest have been notorious for years for their lack of uniformity and widespread variations, but a copyrighted publication, "A Study of Forest Taxation in the Pacific Northwest", may help cure this economic and political problem.

The study outlines simple principles of timber valuation while recognizing the many difficulties in appraising and assessing timberlands. Rothery advocates a sliding scale for assessment as different forests have different values according to their timber harvest schedule.

The Rothery study is recommended as an authoritative and objective text for all assessing officers and officials, legislators, students of forestry and taxation, forest landowners throughout the two states and economists. It may be purchased at $5 a copy from the Industrial Forestry Association, Dept. W, 1410 S. W. Morrison Street, Portland 5, Oregon.

Maintenance Practices Simplified

Maintenance practices are simplified for operators of Cat DW21, DW20 and DW10 Tractors in a multi-colored cartoon-type booklet being issued by Caterpillar Tractor Co. The 24-page handbook (Form 30275) will be available from Caterpillar Dealers throughout the world or from Caterpillar Tractor Co., Dept. W, Peoria 8, Ill. It will be published in English, French, Spanish and Portuguese.

Using scenes familiar to the operator, the booklet discusses factory-pre-

Test these IMPROVED GLOVES for your woodworking operations

Here are 3 newly improved types, by the largest maker of coated-fabric work gloves. Wear 5 to 10 times longer than ordinary work gloves, and are safer. We will gladly recommend and supply free test samples of gloves best fitted to your operations.

Improved NEOX: More flexible and better gripping than the original NEOX (reinforced neoprene). Much tougher and more resistant to solvents and other chemicals than ordinary neoprene coated gloves. Many styles.

Rough Finished Natural Rubber: Ideal for handling lumber, also all slippery materials, wet or dry. Very cut-resistant. Over-all or palm coated.

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. . . including Pine, Oak, Gum, Hickory, Elm, Wet Veneer Round-up and Sandy Bark.

Conveyor-fed, no attendant is required to "feed the hog."

Sturdy breaker lugs give absolute protection from major damage caused by tramp steel.

Maintenance costs unbelievably low.

Write for bulletin and details.

Jacksonville Blow Pipe Co.

Jacksonville, Florida

scribed techniques in caring for Caterpillar wheel-type Tractors. Reduction of repair bills and elimination of "down time" is the purpose of the booklet which deals with many specific procedures in connection with routine Caterpillar Engine maintenance.

Cartoon Book on Fire Prevention

Woody, the log that walks and talks like a man, unlimbered another literary weapon in his war against man-caused forest fires. It's a 48-page, two-color, pocket-size booklet called "A Visit To The Forest With Woody." Using comic strip technique, Woody takes Jimmy and Jane for a walk through a Tree Farm.

On the walk they meet squirrels, birds and other forest creatures and learn how trees grow from little seeds dropped on the forest floor. There are other conservation lessons, too. Write: American Forest Products Industries, Inc., Dept. W, 1319 18th St., N. W., Washington 6, D. C.

Animal Glue in Industry

The preparation of this book was undertaken with a view of extending the general knowledge of animal glue, a product of considerable importance in the industrial life of America through its widespread and essential use in nearly all fields of manufacture. It outlines, in some detail, proven methods as developed through the years for the proper utilization of animal glue in its principal areas of application in the adhesive, sizing and coating, composition, and colloidal fields. For further information, contact the National Association of Glue Manufacturers, Inc., Dept W, 55 West 42nd St., New York 18, N. Y.

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When wood is removed from central part of back to reduce weight.

DIMENSION STOCK

ROUGH • SOLID • GLUED UP • SEMI-FINISHED AND FINISHED

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Kiln Dried Dimension Stock
Plain S2S—Machined—Turned
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The Harrison Co.
260 Broadway
Brooklyn 11, N. Y.

Levenson Woodturning & Mfg. Co.
3755 S. Broadway Place
Los Angeles 7, Calif.

G. F. Mooney & Son, Inc.
66 S. Main St.
Farmington, N. H.

The Stratton Co.
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H. G. Winter & Son
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WOOD PARTS TO ORDER

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Curry Wood Products
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Grand Rapids, Mich.

The Woodcraft Corp.
Bay City, Mich.

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WOOD SPOOLS & REELS

North Waterford Spool Co.
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H. G. Winter & Son
Kingfield, Me.

If you manufacture Wood Turnings your firm name should be listed on this page. The cost is nominal. For further information write today: WOOD AND WOOD PRODUCTS, **139 N. Clark, Chicago 2, Ill.**

Names and Events

(Continued from page 68)

Associations

SOCIETY OF AMERICAN FORESTERS, 825 Mills Bldg., Washington 6, D. C., and the CANADIAN INSTITUTE OF FORESTRY will hold a joint meeting in the Mount Royal Hotel, Montreal, Canada, November 17-20, 1952.

NATIONAL PLYWOOD DISTRIBUTORS ASSOCIATION, 20 N. Wacker Drive, Chicago 6, Ill., will hold its 1952 section meetings as follows: Midwest—October 23, 1952, Edgewater Beach Hotel, Chicago, Ill.; Western—October 29, 1952, Hotel Multnomah, Portland, Ore.; Northeastern—November 7, 1952, Biltmore Hotel, New York City; Southern—(all members invited) November 19-21, 1952, Ponte Vedra Inn, on the ocean south of Jacksonville, Fla.

Deaths

QUINTIN T. HARDTNER, 74, one of the oldest lumber manufacturers in the South, died in a Shreveport, Louisiana hospital August 21, 1952, after a long illness. As president of the Urania Lumber Co., Urania, La., and an officer of the Southern Pine Association, Mr. Hardtner pioneered the cause of sustained yield forestry.

MAX OBERDORFER, 72, president of the St. Helen's Pulp and Paper Co., St. Helen's, Ore., died July 26, 1952 at a New York airport, having just returned from a trip to Germany.

FORD MAYER HETTICH, 41, secretary-treasurer of the General Plywood Corp., Louisville, Ky., died of a heart attack at his home in Louisville August 2, 1952.

JAMES B. FORGUSON, a sawmill operator in Putnam County, Tennessee for more than 50 years, died in a hospital in Nashville August 15, 1952.

W. N. HUNTER, 73-year-old retired president of the Hunter Boon Co., Mobile, Ala., died August 20, 1952.

ANDREW JACKSON HIGGINS, SR., 66-year-old World War II ship builder, whose plants have been turning out various lumber products, died August 1, 1952.

HENRY C. HORNBY, 86, president of the Cloquet Minnesota Lumber Co., and well known for many years in national lumber circles, died August 22, 1952 at Duluth.

Trading Post

Trading post ads must be in publisher's office 10th of the month preceding month of publication. Illustrations must be limited to ½ size of space used. No reverse plates. Publisher reserves right to classify, edit, or reject ad. Space sold only in 1-in. units—Size 1-in. deep x 2 3/16 in. wide. Cost, $10.00 per in., cash in advance. No agency commission or cash discount allowed. 5% discount allowed if payment is made in advance for 1 yr.

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Patent Digest

by Royden C. Rinker

Resin Impregnation of Wood

R. R. Austin, U. S. 2,591,768, Apr. 8. Impregnating wood with a monomeric liquid, coating with a liquid sealant such as microcrystalline wax, and aging for a period to permit polymerization.

Paper-Covered Veneer

R. N. Ware, Jr. and R. Cannon (to Chicago Mill and Lumber Co.), U. S. 2,593,708-9, Apr. 22. Method of forming paper-covered veneer sheets from green undried wood, comprising forming a flat ribbon of green undried veneer, passing the ribbon between heaters to heat the wood, spraying hot steam on both faces of the ribbon, continuing to heat until a flat ribbon is produced, unreeling a roll of paper above said ribbon, unreeling a second roll beneath the ribbon, wetting one face of each web of paper, adhesive-coating the other face of each web, stretching the wet paper, depositing the adhesively coated faces of the stretched paper on the wet veneer ribbon, pulling the assembly through a heating chamber, pressing, heating to set the adhesive, and drying the assembly.

Woodworking Machine

F. H. Gillespie, U. S. 2,593,744, Apr. 22. In a woodworking machine, a work table, a battery of rotary end cutters, a frame supporting said cutters on separate parallel axes, means including spaced gears pivotally supporting said frame to enable said cutters to move toward and from a workpiece on said table, toothed tracks supporting said gears for translatory movement on said frame, and means to secure said gears in a selected position on said tracks.

Plywood Barrels

W. E. Hamacher, U. S. 2,593,753, Apr. 22. Forming a cylinder of plywood, beveling the outer face thereof near the end, severing an annulus from the beveled end, beveling the inner face of the remaining portion near the end, inserting a head within the cylinder and spaced inwardly from the end of the remaining portion, removing a short section of the annulus, inverting and contracting the annulus and inserting it within the end of the cylinder with its beveled outer periphery fitted against the inner face of the cylinder and securing the annulus to the cylinder.

Tree Protector

A. L. Meis, U. S. 2,593,781, Apr. 22. A tree protector comprising a flat band of tacky material adapted to be wrapped around the trunk of a tree, a transverse strip secured to one end of said band and having a detachable paddle formed thereon, tacks carried by said strip for attaching the end of the band to the bark of a tree and clip means for securing the free end of the band to the strip end.

Plywood Tubing

F. C. Biggert, Jr. and H. H. Talbot (to United Engineering and Foundry Co.), U. S. 2,593,835, Apr. 22. Machine for forming tubes from sheets of wood veneer in continuous operation.

Woodmaking Machine

F. H. Gillespie, U. S. 2,593,745, Apr. 22. In woodworking apparatus for drawer front shaping and grooving, a horizontal table having means thereon adapted to guide a workpiece moved in sliding contact therewith along said table; rotary saw and cutter means adapted and positioned to separate and groove a portion of the work during motion; and a rotary edge shaping tool mounted adjacent said table, positioned to shape an edge of said separated portion, said edge shaping tool rotating to move cutting edges therein against said work piece and having its rotary axis tilted against the direction of motion of said workpiece whereby the action of the shaping tool forces the workpiece against the table.

Veneer Treatment

A. Elmendorf, U. S. 2,593,863, Apr. 22. Conveying wood veneer through a treating zone, slitting it as it passes therethrough, exerting a longitudinal thrust against the slit portion in the direction of movement of the sheet while conveying the slit portion of the sheet at a speed greater than the speed of the unsplit portion into the zone of treatment thereby increasing the across-the-grain dimension of the sheet.

Adhesive

C. C. Heritage (to Weyerhaeuser Timber Co.), U. S. 2,595,257, May 6. An aqueous protein adhesive which maintains its original viscosity during the time between preparation and application, comprising a protein base and a water-soluble alkaline compound of an alkali metal and containing as filler a ground bark material reacted with alcohol.

Plug Cutter

M. E. Myers. U. S. 2,593,712, June 3. Plug cutter comprising a spindle adapted to be secured on a rotatable shaft and a cylindrical sleeve cutter having opposed cutting blades.

Bark Removing

J. R. Clark and S. M. Adams. U. S. 2,599, 090, June 3. Bark removing apparatus comprising a rotor and a stationary cage.

Circular Saw

A. P. Smith (to Barker Saw Co.). U. S. 2,599,495, June 3. Log sawing machine comprising a base member adapted for connection with a log to be sawed, rotatable power elements, a frame connected with the power elements, an annular saw, and driving means.

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